



# AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING  
WARM AIR HEATING -- SHEET METAL CONTRACTING

MAY, 1945

Reconversion Just Can't Be Orderly - - - - -	Page 54
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Sheet Metal Contractors National Association Meeting - - - - -	Page 88



## ONLY AIR CONTROL FLOOR REGISTERS AND RETURN AIR FACES HAVE RIGID-LOCK CONSTRUCTION

Outstanding among the many improvements to come out of the AIR CONTROL Research Department is RIGID-LOCK Construction—used only in AIR CONTROL Floor Registers and Faces.

By interlocking each fret into every cross fret—an integral unit of exceptional strength is obtained. This construction provides a flat surface that does not "weave" when walked on.

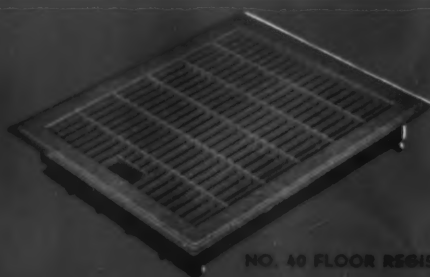
**AIR CONTROL** Floor Registers and Faces have many outstanding features:

**MEDIUM MESH** that is "heelproof" yet has ample free area — eliminating the need for a "wide" and "close" mesh.

**OVAL EDGED FRETS** result in smooth, better wearing surface.

**INFRA-RED BAKED FINISHES** assures the finest in durable, long life finishes.

*Call your AIR CONTROL Jobber today about these outstanding products - - built by Air Control Products, Inc.*



NO. 40 FLOOR REGISTERS



NO. 41 RETURN AIR FACES



Other AIR CONTROL Products—Air Conditioning Registers and Grilles . Gravity Registers . Attic & Roof Ventilators . Ceiling Ventilators . Accessories . AIRTROL Air Conditioning Units.

**AIR CONTROL PRODUCTS, INC., COOPERSVILLE, MICHIGAN**



# 1,001

## USES IN METAL WORK...



Model UIN

# Thor



## PORTABLE ELECTRIC NIBBLER

### Saves Time On Many Metal Cutting Jobs

Here's the ideal portable tool for cutting sheet metal and tubing . . . This Thor Electric Nibbler has unlimited uses in doing the work ordinarily done by a portable electric shear—and doing it easier and better. Curves and circles can be cut on a radius as small as 1 inch—tubing as small as 1½ diameter. By cutting its own clearance, the Thor nibbler cuts curved and corrugated sheets without distortion.

The Thor Nibbler is compactly designed and perfectly balanced for one-hand operation . . . it's only nine inches long and weighs but 3¾ pounds. It can be guided along any line or contour—quickly and easily. Each upward stroke of the punch “nibbles” a rectangular shaving of metal. *The Thor nibbler is a practical time and labor saver that speeds production in the busy shop.*

For full information on Thor nibblers and other portable electric tools, write today for THOR Catalog No. 38.

### OTHER USEFUL *Thor* PORTABLE ELECTRIC TOOLS



Drills



Saws



Bench Grinders



Sanders



Portable Grinders



PORTABLE  
*Electric*  
**TOOLS**

Branches in Principal Cities

INDEPENDENT PNEUMATIC TOOL CO., 600 W. JACKSON BLVD., CHICAGO 6, ILL. • NEW YORK • LOS ANGELES

# AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

**FURNACES  
SHEET METALS**

AND

**Warm-Air  
Heating**

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 114, No. 5

May, 1945

Founded 1880

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## In This Issue

**ELMER SCHARTOW**, of Midland, Michigan, objects to the gravity furnace on the cover of the February issue. "Any self-respecting furnace man would sneer at such a mess of round pipes", he says, and sends a couple of photographs of air conditioning jobs which he considers models of design and good installation. So we show one of Elmer's jobs on this month's Air Conditioning Section cover.

★

First report on the progress of the National Warm Air Heating and Air Conditioning Ass'n's drive to raise \$200,000 for a national advertising campaign appears on page 61. Here we list the manufacturers who have subscribed. As soon as possible, other reports will list the jobbers and the dealers who have subscribed.

★

Professor Konze, on page 65, continues his explanation of the research data behind the new Code and Manual. This article takes a lot of wind out of the long accepted theory of five or more air changes. Also, it explains how blowers should be selected, how they are rated and how they should be used.

★

An original piece of research, covering the important relationships between register area and type; register air velocity and throw; terminal velocity and distances to facing walls begins on page 71. Based upon established data and new tests, the findings reported may lead to completely new conceptions of the effect of air movement on comfort. Careful study is suggested.

★

Our sheet metal trade has been awarded jurisdiction for asbestos-cement ducts and board for air ducts and air equipment housings by the Building Trades Dep't of AF of L. How to take advantage of this award is explained on page 82.

Member of Audit Bureau of Circulations—Member Associated Business Papers, Inc.

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago (2), Ill., U. S. A. Copyright 1945 by Keeney Publishing Company. Publisher—Frank P. Keeney; Manager—Chas. E. Price. Advertising staff: Wallace J. Osborn, New York City, Telephone—Murray Hill 9-8293; J. D. Thomas, Chicago, Telephone—State 6916; Robert A. Jack, Cleveland, Telephone—Yellowstone 1540; R. P. Wettstein, Los Angeles, Telephone—Tucker 2779.

Yearly Subscription Price—U. S. and possessions, Canada, Mexico, South America, Central America, \$2.00; Foreign, \$4.00. Single copies U. S. and possessions, \$.25. Back numbers, \$.50. January, 1945, Directory issue, \$1.00 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of March 3, 1879.

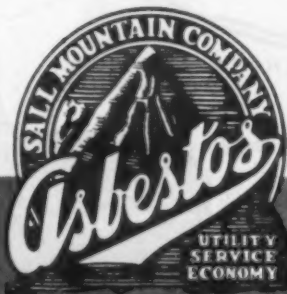
# OUR *NEW*...



## MODERN PLANT

With the completion of this thoroughly modern plant, Sall Mountain Company is in position to promptly furnish the finest in Asbestos Products.

This new plant is up-to-date in every way and is streamlined for economical operation. Machinery of the latest type has been specially designed and installed; this and improved methods assure our customers the very best in Asbestos Paper, Millboard, Ductboard, Pipe Coverings, Cements and other asbestos products for insulation and fireproofing.



### SALL MOUNTAIN COMPANY

176 WEST ADAMS STREET

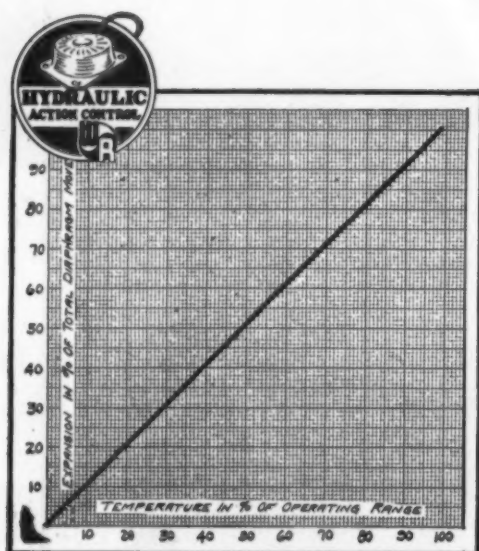
AND. 2414-15

CHICAGO 3, ILLINOIS



# DIAPHRAGM MOTION UNIFORM

## ★ PER DEGREE OF TEMPERATURE CHANGE



Notice, in the diagram at the left, how the expansion of the Hydraulic-Action diaphragm actually draws a straight line across the chart. This is because the force exerted by expansion or contraction under heat or cold is always *uniform*, and always predictable. That's another reason why White-Rodgers controls are easier to install and free of trouble.

### 8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action principle incorporating solid-liquid-filled bulb and capillary provides expansion force comparable to that of a metal bar.
- ★ 3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.

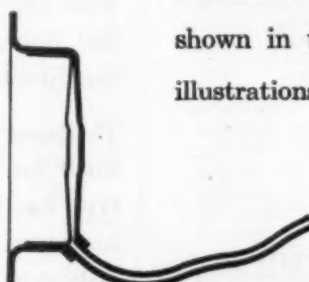


### HERE'S HOW HYDRAULIC-ACTION GIVES UNIFORM EXPANSION



CONTRACTED

Above is a cross section of the diaphragm and part of the liquid-filled capillary. In this view the liquid has contracted, releasing the pressure on the diaphragm and causing the switch contacts to function.



EXPANDED

In this cross-sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

The solid-liquid charge of Hydraulic-Action provides uniform expansion and *uniform* motion of the diaphragm, as shown in the accompanying illustrations.

Actual-size illustration of the White-Rodgers diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism.



## WHITE-RODGERS ELECTRIC CO.

1215E CASS AVENUE

ST. LOUIS 6, MISSOURI

*Controls for Refrigeration • Heating • Air-Conditioning*



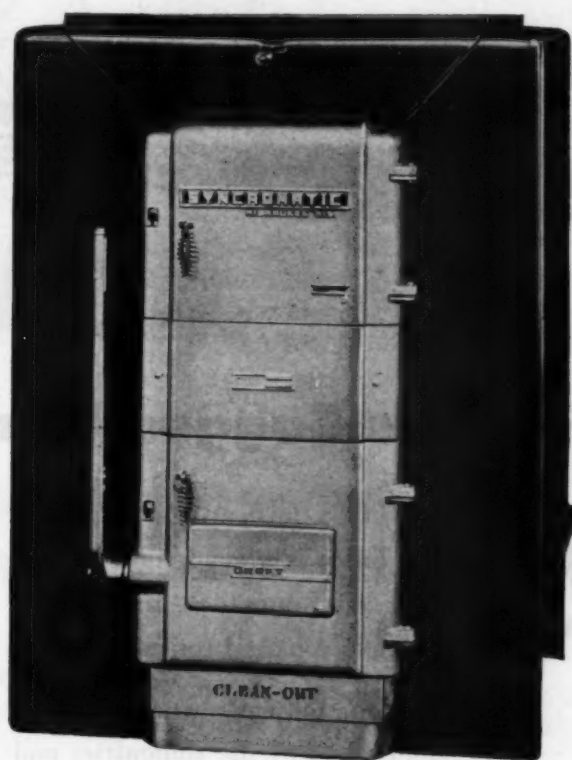
**COAL** *Gravity* **OIL** *Forced Air* **GAS**

**MODERN**

**SYNCHROMATIC**

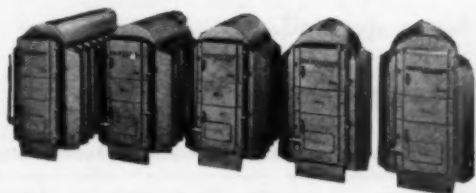
**STEEL FURNACES**

*Star Performance!*



America's Finest Complete  
Line of Warm Air Furnaces  
— Deluxe Quality at Regular Prices:

Be Guilty of Showmanship with Syncromatic  
—Yes! It's a Real Showoff—and a Perfect  
Actor! PROFIT? — Does a Hit Pay Off???



SEE YOUR JOBBER! He may have a franchise  
available for you — so you can run your own  
← **FIVE STAR SHOW!**

**SYNCHROMATIC CORPORATION**

**5110 NORTH THIRTY-FIFTH ST., MILWAUKEE 9, WISCONSIN**



## May Flowers Suggest Furnace Repairs Now



**W**ITH the heating season over, now is a good time to urge your customers to have their furnaces repaired for next winter.

It's none too early when you consider some of the difficulties and delays experienced last year with shortages of manpower and materials. Chances are that the situation may not be any better this year. So get started without delay in developing this profitable business while the matter is fresh in your customers' minds.

More than ever before, it's important to use genuine RYBOLT repair parts...made from original patterns with quality materials. They're easier to install because they are *made right* and *fit right*. They will give dependable service and satisfaction because they are identical with parts used in the original RYBOLT unit.

Send in your orders now to meet your requirements as we have a hard time keeping up with the heavy demand.



**BUY AN EXTRA WAR BOND**

# THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO



An "X-Ray" Picture of the  
CENTURY ELECTRIC  
*Hermetic Refrigeration Motor*

THE ROTOR

THE STATOR

## Quiet and Unseen, It Will Be Extremely Popular On Many Leading Post-War Air-Conditioning and Refrigeration Units

Quietly and unseen, the Hermetic Motor will furnish the dependable power so necessary for air conditioning comfort or effective food preservation.

Above we show a view of the motor's working parts. The Hermetic Refrigeration Motor has been reduced to just two simple, sealed-in parts — a stator and rotor — which you will hardly recognize as an electric motor.

Sealed-in motors are not new. They have been used on small refrigerators quite successfully. But on larger units for air conditioning and frozen foods, Century engineers had to overcome many obstacles. For example, ordinary insulation on the motor windings of smaller units was

not satisfactory for the larger motor windings.

Century Engineers were the first to recognize the need for and to develop a combination of magnet wire with a basic new electrical insulation, which made possible, several years ago, the first successful integral horsepower motor for hermetically sealed refrigeration compressors.

Many leading manufacturers of air-conditioning and frozen-food units — whose names are familiar to the American public — will use Century Hermetic Refrigeration Motors for their post-war products.

For top performance and dependability, you can always rely on any of the many types of Century Electric Motors, built in sizes 1/20 to 600 horsepower.



422R

**CENTURY ELECTRIC COMPANY, 1806 Pine Street, St. Louis 3, Missouri**

*Offices and Stock Points in Principal Cities*



## It's time to plan your summer service calls

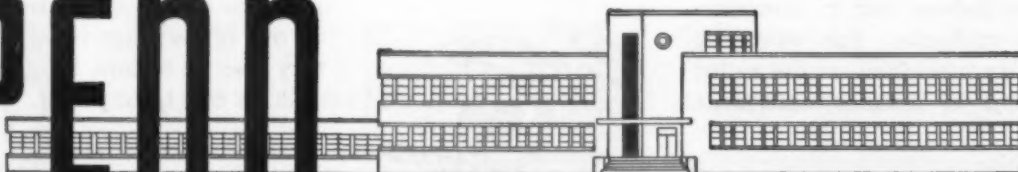
● Start this needed service work as soon as the present heating season is over. Schedule it systematically through the summer months . . . so next fall won't see you snowed under by customers' calls for immediate service. With their plants in "first-class" condition, your customers will be ready for the hard winter ahead—a winter that promises to see even greater fuel shortages than last heating season.

Help them stretch available coal supplies even further . . . help them combat fuel waste by selling them Draftender Controls, available *without consumer priorities*. They include damper motor, PENN Temtrol—the heat-anticipating thermostat—and limit switch.

Add these three to *any hand-fired* plant, and more economical firing is assured. They eliminate alternate chilling and overheating prevalent with hand-controlled dampers.

So make your summer *service calls* more profitable—for your customer and you—by selling him Draftender Controls. You'll be selling comfort, convenience and economy—tying in with the government fuel conservation program. Order Draftender Control Sets from your local wholesaler now! For further information, write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U. S. A. In Canada: Powerlite Devices, Ltd., Toronto, Ontario.

# PENN



## AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

# JUST PUBLISHED!

## A New VIKING SALES GUIDE for BLOWER DEALERS

### Tells You

- How to find prospects
- What Winter Air Conditioning is and what it does
- How to select and sell blowers
- How to close sales
- How to figure costs
- How to get repeat business

## Write for Your free Copy!

Get your copy of this brand-new Viking sales manual just published for dealers who want to make money selling blower-filter units. It is loaded with genuine sales help for the heating dealer who really intends to go after the important sales volume that exists in this important

comfort merchandise. Most of the people in your own city want the comfort that winter Air Conditioning brings, and are ready to buy now while their earnings are high. But you must know how to sell Blowers if you're to cash in on that demand.

### HERE'S WHAT YOU GET

The Viking Sales Guide gives you an education in Winter Air Conditioning and presents the information in demonstrator fashion so you can show it to your prospect. No other manual is available today which does this. This feature alone will help you close blower-filter unit sales in less time. In addition, you will learn what to do to get leads, how to sell prospects, how to figure costs of installation and how to select the best blower size. This guide is free on request to authorized heating dealers who are interested in the profit opportunity offered by the blower industry. Write for it.

**VIKING AIR CONDITIONING CORP. DEPT. M**  
5600 Walworth Ave., Cleveland 2, Ohio  
Send at no cost or obligation, a copy of your new Sales Guide as soon as it is ready.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ (ZONE) \_\_\_\_\_ STATE \_\_\_\_\_

# Viking



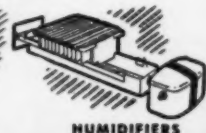
VENTILATORS



ATTIC FANS



BLOWERS



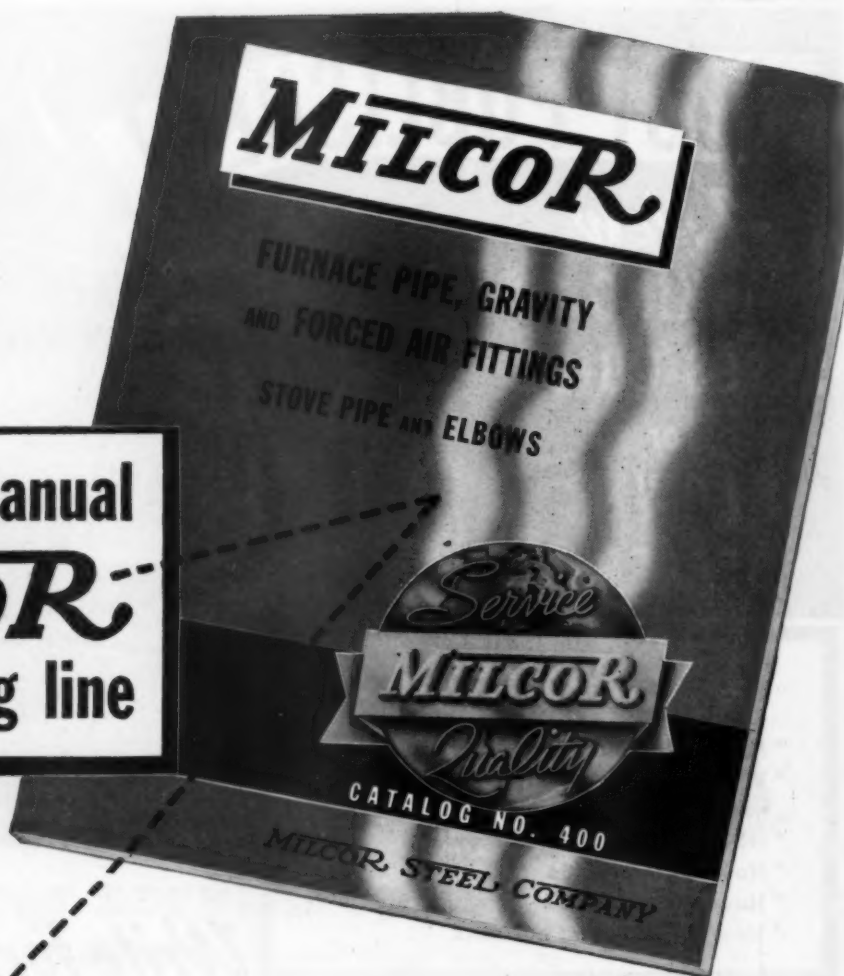
HUMIDIFIERS

IN PEACETIME, PRODUCERS OF:

AIR CONDITIONING CORPORATION • 5600 Walworth Avenue • Cleveland 2, Ohio



new . . . handy manual  
on **MILCOR**  
simplified heating line



What you can expect to get from the simplified, but *still complete*, line of Milcor furnace pipe, gravity and forced air fittings, stove pipe and elbows is shown in this new catalog.

It provides you with a detailed picture of how the Simplified Practice Program R-207-45, sponsored by the U. S. Department of Commerce, National Bureau of Standards, and adopted by Milcor and others, works to our mutual benefit, by weeding out those particular sizes, weights, and styles whose existence never was justified by any substantial consumer demand.

With the number of special fittings reduced to those most widely used, we at Milcor can concentrate on producing *better values* for you and providing *better deliveries*.

You, the sheet metal man, can carry a smaller inventory, reduce your overhead, and enjoy greater assurance of producing results on the job that are good-looking, safe, satisfactory.

A free copy of the new Milcor Heating Catalog is available to qualified sheet metal men upon request. Write for yours.

The publication of this catalog does not indicate an improvement in our ability to supply you with Milcor heating materials at present. Our war work and shortages of materials and manpower still permit the manufacture of only a few Milcor products — and in extremely limited quantities. However, we are glad to extend all cooperation possible, dependent upon current conditions.

## **MILCOR STEEL COMPANY**

MILWAUKEE 4, WISCONSIN

Baltimore 24, Maryland • Chicago 9, Illinois • Kansas City 8, Missouri  
Los Angeles 44, California • Rochester 9, New York

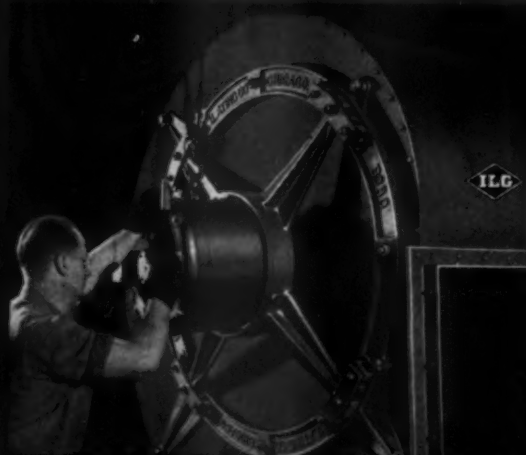
THE J.M.&L.A.

G-95

. . . equipped to provide additional service through **OSBORN CO.** . . . a Division of Milcor Steel Company

CLEVELAND 14 • DETROIT 2 • BUFFALO 11 • CINCINNATI 25

# HOW DOES ILG REDUCE INSTALLATION COSTS?



1. Slip ILG Motor into supporting Motor Ring



2. Bolt Motor into place, alignment is complete!

## **By building Centrifugal Fans which can be permanently aligned in two easy steps!**

Many are the contractors, architects and engineers who save time, headaches and money by specifying ILG *Direct-Connected* Centrifugal Fans! With fan wheel suspended and driven directly from the motor shaft, *permanent* alignment is secured by following the two easy steps pictured above. This compact, simple, rugged design also makes it possible to partially recess motor into side of casing, saving valuable inches of space!

And each ILG Fan is so arranged that it can be quickly bolted into place on floor, wall or ceiling — bringing you savings in space, time and money all along the way.

Think of it — neither belts nor pulleys to require alignment, cause shut-downs for replacement, need frequent servicing—no expensive guards to buy! You no longer need to allow for constant power-wasting friction losses, nor for reduced air delivery because of uncontrollable slippage. Get latest data—and free copy of 88-page ILG-BOOK—by calling nearby Branch Office (consult classified directory) or writing us today.



## **VITALIZED VENTILATION**

AND AIR CONDITIONING



### **FREE!**

88-page book  
on solutions to  
ventilating  
problems.

ILG ELECTRIC VENTILATING CO., 2871 N. Crawford Avenue, Chicago 41, Ill., Offices in 38 Principal Cities

### **WANTED: GRADUATE ENGINEERS!**

for ILG Branch Offices, Research, Engineering Departments. Exceptional opportunities now and post-war for graduates of accredited technical schools. Send details on education, experience, health, age, marital status, etc.

# ORGANIZATION

Organization means the smooth functioning of individual units devoted to a concerted effort. The concerted effort of the Luxaire organization is to build modern heating equipment that will provide the greatest heating value at a competitive cost.

Through organization, Luxaire has developed new processes, increased production facilities, improved manufacturing methods and maintained continuous research.

These factors are an assurance that when peace returns Luxaire will be a step ahead in the production of outstanding warm air heating and air conditioning equipment which will result in greater sales and greater profits for the heating trade.

## *Luxaire*

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

THE PRE-WAR LINE OF LUXAIRE WARM AIR HEATING  
AND AIR CONDITIONING UNITS FOR COAL, GAS, OIL



Series 600  
Coal Fired Steel  
Gravity Furnace



Series C  
Coal Fired Cast  
Gravity Furnace



Series 700  
Coal Fired Steel  
Gravity Furnace



Series AC-700  
Coal Fired Steel  
Air Conditioning  
Unit



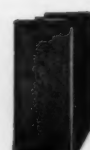
Series A  
Gas Fired Steel  
Air Conditioning  
Unit



Series C  
Gas Fired Steel  
Gravity Unit



Series H  
Gas Fired Steel  
Utility Air Con-  
ditioning Unit



Series 800  
Oil Fired Steel  
Air Conditioning  
Unit



# To Increase Your Sales

## OF HAND-FIRED UNITS AND ASSURE CUSTOMERS OF GREATER COMFORT AND FUEL ECONOMY



... be sure the furnace or boiler you handle is equipped by the manufacturer with a Combustion Control System

Here is a new merchandising idea in hand-fired heating — Combustion Control Systems sold as original equipment on furnaces and boilers — that provides customers with the closest approach to automatic heating and presents new sales opportunities to the heating trade.

### HOW COMBUSTION CONTROL SYSTEMS INCREASE SALES

Now for the first time you can sell hand-fired furnaces and boilers on the basis of fuel savings ranging by test from 15 to 25 per cent. Now you can sell home owners equipment that provides the comfort of automatic temperature control for but a few dollars more than an ordinary hand-fired installation.

The exclusive Magic Dial Thermostat is sensitive to the slightest changes in room temperature. It eliminates overheating or chilly periods and is instantly adjustable to suit the individual heating preference of the householder. The Barometric Draft Control with attached Damper Operator automatically controls the draft to insure maximum fuel economy. Heat loss up the chimney is minimized, banks last longer and firing frequency is reduced. Dangers of overheating are eliminated by the Limit Control which guards the heating plant against damage and fire hazards. In the event of power failure the Combustion Control System "fails safe," automatically checking the fire until service is restored.

### PROFITABLE SALES TO EXISTING INSTALLATIONS

You can also make many profitable sales during the coming heating season, and do your part in the nation's fuel conservation program, by selling Combustion Control Systems to improve the operation of existing hand-fired furnaces and boilers. Ask your manufacturer for details of his Combustion Control System merchandising plan to help you get this business.

*Fuel-Saving  
Starts With*  
**CONTROL**



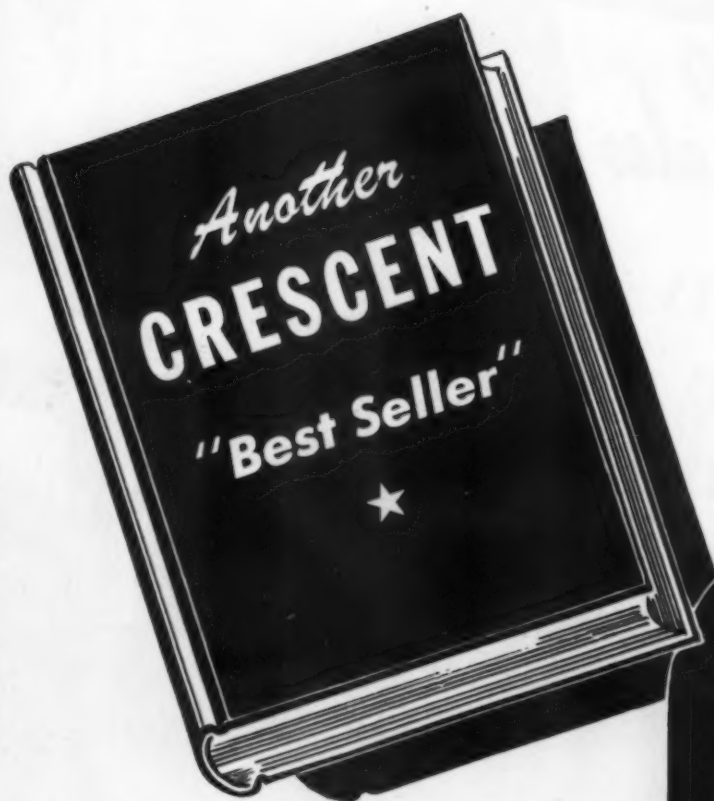
# Perfex

## CORPORATION

500 W. OREGON AVENUE, MILWAUKEE 7, WISCONSIN



MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE NAME MARK OF LEADING PRODUCERS OF HEATING EQUIPMENT



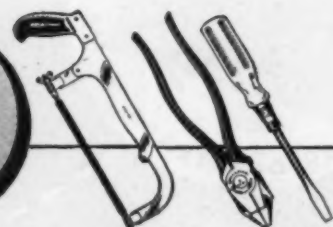
## *A complete line of* **DEPENDABLE SLIP-JOINT PLIERS**

Crescent Slip-joint Pliers have long been "best sellers" on the counters of America's hardware stores. The best reason for this popularity is the Crescent reputation for quality tools. When war came, these versatile tools were enlisted too. On thousands of life rafts, they constituted the only "tool kit". They have also been on thousands of bomb runs over enemy territory. Someday soon (we hope) they will be back for service on the home front. When they are, they will give better-than-ever value for the price.

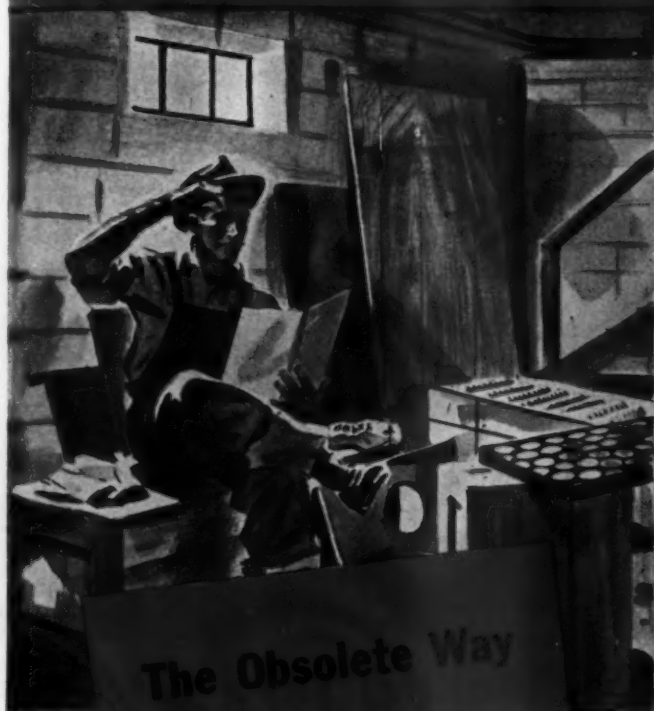
**CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.**



**CRESCENT TOOLS**  
*Give Wings to Work*



# *Janitrol's* FACTORY ASSEMBLY SAVES YOU TIME AND TROUBLE . . . INCREASES CUSTOMER SATISFACTION



The Obsolete Way



The Janitrol Way

When you sell a popular size Janitrol Gas-Fired Winter Air Conditioner, you're selling a completely assembled heating unit. And that means a *lot*, both to *you* and to your customers.

First, Janitrol saves you installation time and labor. If, like most dealers, you charge a flat rate for installation, the time you save in installing Janitrol factory assembled units *adds real profits* to every sale.

Second, there are no after-installation

headaches with Janitrol . . . no customer complaints or frequent service calls due to the wrong assembly of parts. Third, you avoid the bother of handling numerous small parts—the delay of replacing broken parts—the possibility of error in assembly. And most important, the customer satisfaction Janitrol provides, brings *you* goodwill . . . more sales.

You select the Janitrol required for the job, receive it all in one com-

pactly assembled unit, and it's ready for the necessary connections to duct work, gas outlet, and controls. It will be as simple as that!

But don't wait until the postwar buying boom is upon us before you learn more about what Janitrol can do for you. For complete descriptive data on Janitrol's many advantages and extensive line of gas-fired heating equipment, write Surface Combustion, Toledo 1, Ohio, *today*.

# *Janitrol*

**GAS-FIRED  
HEATING EQUIPMENT**





# THEY DON'T *"Shoot the Cook"* IN THIS WAR



## "DL" Float Valves Help Protect Rolling Field Kitchens

In the last war, someone was always shooting the cook—just about dinner time. The smoke from coal or wood-fired rolling kitchens made a fine target for enemy artillery and bombers.

Our army field kitchens are now fired by gasoline or oil. There is no telltale smoke to reveal the location of the kitchen and the mealtime concentrations of men. Meals can be cooked after nightfall because the kitchens do not glow.

Thousands of these field ranges, tent heaters, water heaters and furnaces—wherever our men are fighting—are equipped with "DL" Float Valves.

"DL" Float Valves are in demand by manufacturers of war equipment because of their simplicity of design. A screw driver is the only service tool needed.

When our soldiers return, thousands of them will remember the reliable service rendered by "DL" Float Valves, making much more saleable the postwar stoves, furnaces and heaters equipped with these valves.

## DETROIT LUBRICATOR COMPANY

General Offices: DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives: Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg



"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

### An Important "DL" FLOAT VALVE FEATURE



### AUTOMATIC TEMPERATURE COMPENSATION

Fuel oil viscosity increases as temperature drops. To avoid underfeeding when oil is cold—overfeeding when warm, the "DL" Float Valve has a simple temperature compensation which automatically maintains constant fuel delivery regardless of temperature.

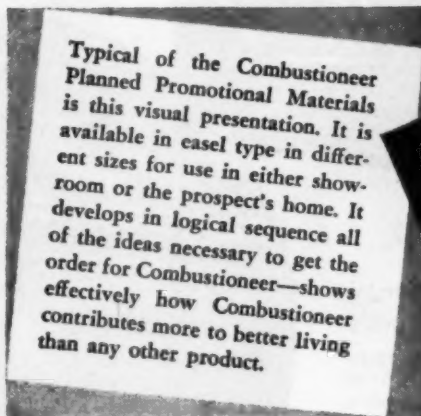
# COMBUSTIONEER IS 1<sup>ST</sup>

**WITH ORDER-GETTING PROMOTIONAL  
AND ADVERTISING HELP!**

**Average Specialty Selling Men Become  
Crack Stoker Salesmen with the Aid of Combustioneer  
Presentation and Promotional Materials  
Especially Designed for Them**

Until you have seen Combustioneer's great array of Sales Presentation, Promotional and Advertising helps, you can not realize how they fit like a glove the needs of average specialty selling dealers and their salesmen. Every detail of Combustioneer's visual presentation and advertising materials—from finding the prospect to the signing of the order of either Domestic or Commercial Models—is designed with average specialty selling men in mind. Step by step, they have the power of persuasion to rivet the prospect's attention and translate it into action.

There's nothing mysterious about the precision-built mechanism and the outstanding features of design and construction, which make Combustioneer's story of economical automatic heating so powerful and persuasive. And Combustioneer has the plan and the materials for mail development, home presentation and store demon-



stration which do everything but write out the order.

All these are backed up by Combustioneer's continuous National Magazine Advertising, Localized Advertising Campaigns, Regular Promotional Plans, Window and Store Display Materials, Comprehensive Sales and Service Manuals.

#### MANY MODELS NOW AVAILABLE

There is no waiting to get going with Combustioneer! Many models are now being sold to those who need Combustioneer's benefits in *drastically reducing fuel costs*, and maintaining uniform temperatures with *reduced labor* and supervision time.

#### WRITE FOR COMPLETE DETAILS

Get all the facts about Combustioneer's immediate sales and profit-making Franchise. Let us show you the kind of sales-making promotional and advertising helps that will work for your selling personnel.

The Steel Products Engineering Company  
1208 W. Columbia St., Springfield, O.

## Combustioneer

**AUTOMATIC COAL STOKER**

#### HOME AND COMMERCIAL MODELS FOR EVERY NEED

In addition to Imperial and Bin Feed Models which serve homes and apartments up to 14 rooms, Combustioneer's complete line of Commercial Models range in capacity from 75 to 1250 lbs. per hour.

★ KEEP ON BUYING WAR BONDS

Which would you want  
for your customers?

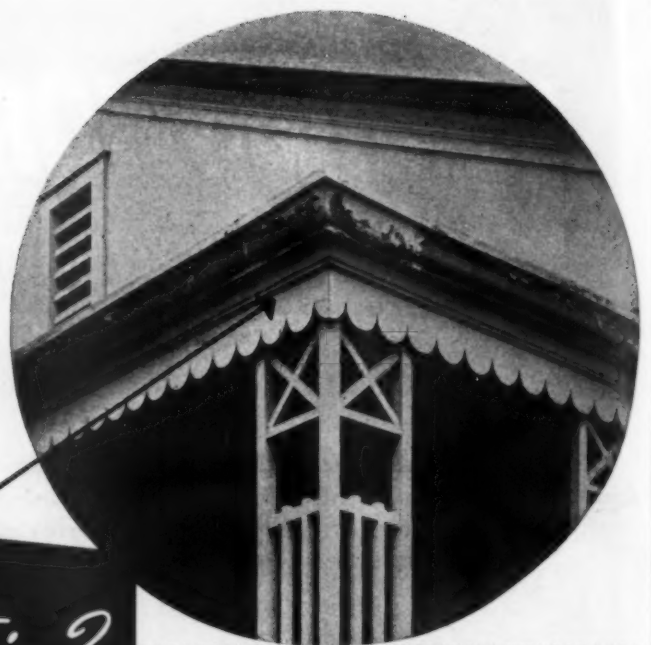
*This or This?*

Here are two roof-drainage jobs. On one the sheet metal contractor used ordinary galvanized steel. On the other house the contractor used ARMCO Galvanized PAINTGRIP (the base metal is Ingot Iron).

It is plain to see what happened. Practically all the paint has peeled off the ordinary galvanized gutters. The metal was acid-treated before painting. This not only destroyed part of the zinc coating, but the raw zinc beneath the paint dried it out rapidly and caused early paint failure. You don't want this to happen to your work.

#### Why it pays to use Paintgrip

Now take another look at the house with the ARMCO PAINTGRIP job. The paint is as smooth and protective as the day it was put on. This is the kind of work you will want to give your customers—to hold their good will; to get more repeat business; to advertise the fact that you use quality materials; and to make more money. Remember, it *actually costs less* to use ARMCO Galvanized PAINTGRIP than to acid-treat ordinary galvanized before



painting. Yet it *takes paint without weathering or pre-treatment and holds it much longer*. That's a good point to make with architects, general contractors and homeowners and they'll appreciate your telling them.

Use ARMCO PAINTGRIP now—whenever you can get it for repair work—and remember it for your post-war work. It'll pay off in more and better jobs. The American Rolling Mill Company, 951 Curtis Street, Middletown, O.

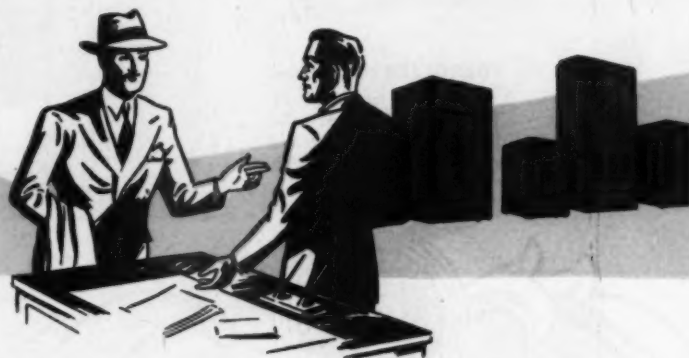
The American Rolling Mill



Company



# Just what is Indoor Climate Control?



Indoor Climate Control is simply the automatic control of indoor temperature and humidity—summer and winter—regardless of the outdoor weather.

To provide such year 'round comfort, adequate equipment for heating, cooling and air filtering, humidifying and circulating must be installed. If only winter climate control is needed, the cooling equipment is not installed. If only summer comfort is needed, the heating equipment is not provided.

## The Next Advance in Automatic Home Comfort

Everybody knows such comfort is possible because of first hand experience in theatres and restaurants. Prospective home owners and remodelers want Indoor Climate Control as complete as they can afford. They'd rather set a thermostat than shovel coal or haul ashes!

## Viking Equipment Meets Every Need

Whether the householder lives in a small home or large, re-

gardless of whether a basement or a utility room installation is desired, no matter whether oil, gas or coal is to be the fuel, Viking can provide automatic Indoor Climate Control to whatever extent the buyer can afford.

## Viking Dealers Sell Better Comfort at Lower Cost

As a Viking contractor-dealer, you will be able to deliver more efficient installations with less cost. You'll have both heating and cooling units of outstanding mechanical merit. In addition, you'll have the support of a nearby Viking distributor who carries a full line of Viking products and all the installation materials you need. From this convenient supplier, you can draw just the items you need from time to time during the various stages of completion of your installation contract.

Selling Indoor Climate Control is a practical, highly profitable and fast growing business for the contractor-dealer who has the Viking line.

# VIKING MFG. CORPORATION

1601 U. B. BLDG., DAYTON 2, OHIO



Year 'round Air  
Conditioners



Floor  
Furnaces



Furnaces



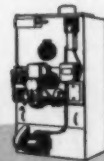
Space  
Heaters



Boilers



Room  
Coolers.



Utility Room  
Furnaces



Conversion  
Burners



Water  
Heaters

## VETERANS STILL IN SERVICE

WEIR-MEYER dealers and distributors need only point out the record behind WEIR-MEYER Furnaces! Their veteran performance is the direct result of finer manufacturing . . . greater experience. These outstanding records speak for themselves and provide WEIR-MEYER dealers with powerful, effective sales advantages!



**YOUNGSTER of 50 Winters**  
E. F. Hertz of Sheffield, Illinois, installed the WEIR furnace pictured here in his home in 1896. It still works perfectly.



## CONSTANT LEADERSHIP

Years of "know-how" assure WEIR-MEYER distributors and dealers of equipment that will capture post-war markets.

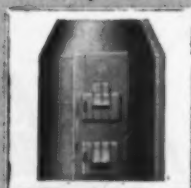
If you want a complete line of Warm Air heating and Air-Conditioning equipment that gives the consumer greatest value, that gives you legitimate profit and enthusiastic customers, investigate WEIR-MEYER.

You may be in territory not already served by a WEIR-MEYER dealer. Write today. It is the first step toward postwar leadership in your town.

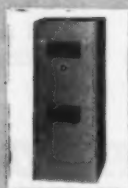
### THE MEYER FURNACE CO.

Weir and Meyer Furnaces—Air Conditioners  
for COAL—GAS—OIL Peoria 2, Ill., U. S. A.

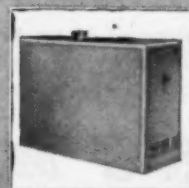
### For all Fuels COAL—GAS—OIL



**WEIR U Series STEEL FURNACE.** Famous WEIR riveted and welded construction. Exclusive, entirely new features.



**MEYER Gas-fired AIR CONDITIONER.** Built for efficiency and durability. Easy to install. Finer performance. Greater convenience.



**MEYER Oil-fired AIR CONDITIONER.** Gives the user of oil a new conception of cleanliness, efficiency, economy of operation.

**WEIR-MEYER** MEANS *Modern Heat*

AND YOU'LL FIND...

only **OIL-O-MATIC**  
has an atomizing burner that

HANDLES LESS THAN  
2 QTS. AN HOUR!



The greatest single postwar market for oil heating equipment will be the SMALL home. This tremendous market is a "natural" for Williams Oil-O-Matic dealers, because the Oil-O-Matic LO-PRESSURE Burner will handle LESS THAN TWO QUARTS OF OIL AN HOUR—and do it efficiently!

The ordinary or high-pressure burner, which depends solely on a pin-point orifice to regulate the fuel consumption, has never successfully touched this market. Even the nozzles of 1½ gallon capacity high-pressure burners have so small an opening that they often clog.

The Oil-O-Matic burner, with its patented Thrift Meter that pre-meters the oil to the desired consumption, has a nozzle opening that will not clog even with the oils predicted for tomorrow.

Oil-O-Matic dealers can plan with confidence on sales to the hundreds of thousands of postwar small home builders.

WILLIE O-MATIC says:

"Every War Bond cashed in prematurely is a 'stab in the back' to our fighting men. Keep the Bonds you buy—and keep buying more."



COPR. 1945. WILLIAMS OIL-O-MATIC HEATING CORP.

The war production excellence that has *four times* won for Williams workers the Army-Navy Award, as well as the Army Air Forces' "Approved Quality Control Rating", assures still finer Oil-O-Matic equipment when peacetime products can again be built.

**WILLIAMS**  
**OIL-O-MATIC**  
**HEATING**

WILLIAMS OIL-O-MATIC HEATING CORPORATION • BLOOMINGTON, ILLINOIS



# Let **TORIDHEET** help you to **Uncork Sales!**

**(not merely sales figures!)**

**I**N our opinion, the heating industry has been quite happily sane even when it has been tempted to present figures that relate to future sales. Nobody has become unduly excited over projected figures. Yet it's as easy to project wild sales figures for the heating business as it is for any business.

But, we think it is unnecessary to exaggerate the *facts*, which we believe can be briefly summarized as follows:

During the first postwar year, it may prove impossible for the oil burner industry to supply the number of burners that are definitely needed now as replacements and for installation in homes already built.

That means that we are thoroughly convinced that our business is not going to suddenly come to new peaks of high production even though we reach new peaks of high demand. Sales will be continuously

growing for many years to come.

So, if you are thinking of sharing in the possibilities of what will be a substantial business opportunity with a substantial future, we suggest that it might be wise for you to line up with Toridheet *now*. Be soundly prepared to successfully meet your opportunities.

The final court of judgment on your choice of a line will be your friend, the consumer. He will enjoy with you the service given to him by Toridheet. You will always be on good safe ground when

you sell proven Toridheet equipment. The Toridheet Line includes Oil Burners, Oil-Burner Boilers, Air Conditioning Units; Gas and Coal Heaters and Oil Burning Water Heaters.

Maybe it's time to make a move in our direction. Why not write and start to get the *feel* of how Toridheet *uncorks* sales—not merely sales figures.

**Oil  
Burners  
and  
Oil-Burner  
Boilers  
available  
NOW**

**BUY WAR BONDS . . . AND HOLD THEM**

## **TORIDHEET DIVISION**

**CLEVELAND STEEL PRODUCTS CORP. • CLEVELAND 2, OHIO**

*Oil Burners • Air Conditioning Units • Oil-Burner Boilers  
Coal and Gas Furnaces • Oil Water Heaters*

# NOW IS THE TIME

TO GET READY FOR THIS  
PROFITABLE POSTWAR MARKET



● Yes, all reports indicate that the postwar market for stainless steel equipment will be tremendous . . . and mighty profitable, too, for the sheet metal contractors who are ready to handle their share of it.

Contrary to the earlier opinions of some, working stainless steel is NOT a difficult job—is NOT limited to shops with special equipment.

That is why Republic—a leading producer of stainless steel—offers you, free of cost or obligation, two helpful books: "The Fabrication of Republic ENDURO Stainless Steel" and "The Welding of ENDURO Stainless Steel."

Here, in brief and concise form, you will find valuable, detailed information and recommendations on the various methods of fabricating and welding stainless steel. They also contain useful tables which will assist you in your work.

If you have not already received copies of these books—or if yours have been lost or mislaid—write us today for copies of either or both books.

## REPUBLIC STEEL CORPORATION

*Alloy Steel Division • Massillon, Ohio*

**GENERAL OFFICES • CLEVELAND 1, OHIO**

Export Department: Chrysler Building, New York 17, N. Y.

*Republic*  
**ENDURO STAINLESS STEEL**

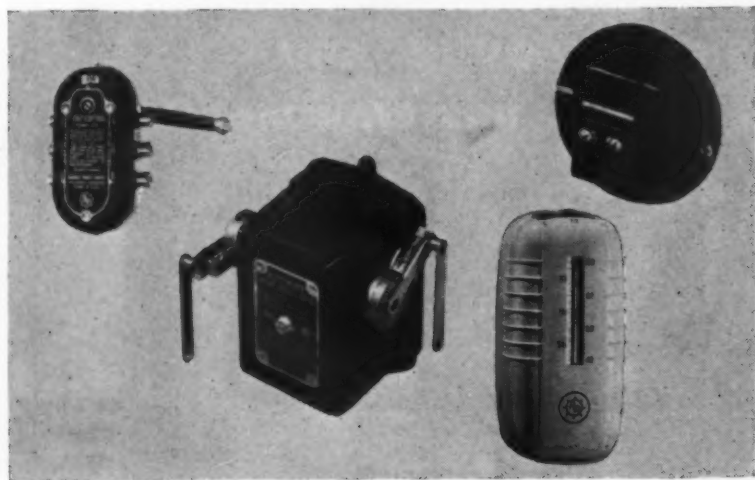
Reg. U. S. Pat. Off.



Other Republic Products include Black, Galvanized, Ingotcasted and Electro Painted Steels—Yankee Iron Steels

# Automatic Control Saves Tons of Fuel!

**BUILD BACKLOG OF INSTALLATIONS NOW!**



Installing an "A-P" 3-Piece Automatic Heat Regulator Set is definitely a "must" when production is again permitted. The unit saves fuel and insures uniform, healthful temperatures with hand-fired furnaces.

First, attach an "A-P" Thermostat to an inside wall—about 4 feet above floor is good. This is the *invisible janitor* that "floats" the fire, keeping it at maximum efficiency without heat loss.



Next, Put an "A-P" Limit Control on the bonnet of the furnace. This is essential. It prevents furnace heat overshooting room thermostat settings. Set the Limit Control in accordance with outside temperatures to prevent excessive overheating.



Finally, install the "A-P" Damper Regulator Motor, Connect to both the Room Thermostat and the Limit Control. Parts of this unit are wear-resistant and anti-corrosion treated to avoid rusting from summer basement dampness.

**BECAUSE** present Government regulations prevent production of "A-P" Automatic 3-Piece Heat Regulator Sets, these units are not available now. However, when war manpower rules and materials allow, we will ship these essential fuel-saving Controls again.

**AUTOMATIC PRODUCTS COMPANY**

2470 N. Thirty-Second Street • Milwaukee 10, Wisconsin



## **DEPENDABLE CONTROLS**

**FOR HEATING • AIR CONDITIONING • REFRIGERATION**



# .....55 YEARS OF EXPERIENCE-QUALITY AND SATISFACTION

Since 1890 VICTOR FURNACES have been designed, built and sold with notable success. During these 55 years, the name "VICTOR" on heating equipment has become a synonym for built-in quality, rugged construction, plus "tops" in engineered satisfaction. Each Victor you install builds more sales — more profits for you. Sell "VICTOR" — the furnace with exclusive **HEAT RADIATING FINS!**

PREPARE NOW TO SELL THE VICTOR LINE

• Last month we invited you to investigate US!... We repeat that invitation... Write us today!



FURNACES • OIL BURNERS • STOKERS • GAS BURNERS • BLOWERS • ACCESSORIES . . . .

## HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1326 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

# Get the facts



"COLLECTOR FITS INTO ANY COAL BIN WITHOUT ALTERATION TO THE BIN—SAVES BACK-BREAKING COAL SHOVELING—FEEDS LOW PRICE SLACK COAL."



"COAL CAN BE PIPED FROM ANY DISTANCE—CAN BE FED AT ANY ANGLE BY THE USE OF THE POCAHONTAS UNIVERSAL KNUCKLE."

**CONTROLS**  
Minneapolis-Honeywell, with specially designed super-sensitive fire-banking control, which operates directly by the temperature of the fire.



**DOUBLE OVERLOAD PROTECTION**  
In addition to the mechanical shear pin there is a special electric overload device built into each motor for added protection.



**TYPE FOR EVERY FURNACE**  
Can easily be installed in steam, hot water, or warm air furnaces. Several sizes to choose from.



## POCAHONTAS

THE FIRST SUCCESSFUL BITUMINOUS BIN-FEED ASH REMOVAL STOKER

# Soon the Stoker of tomorrow— manufactured TODAY!

ANY  
CAN BE  
NGLE  
THE  
UNI-  
LE."

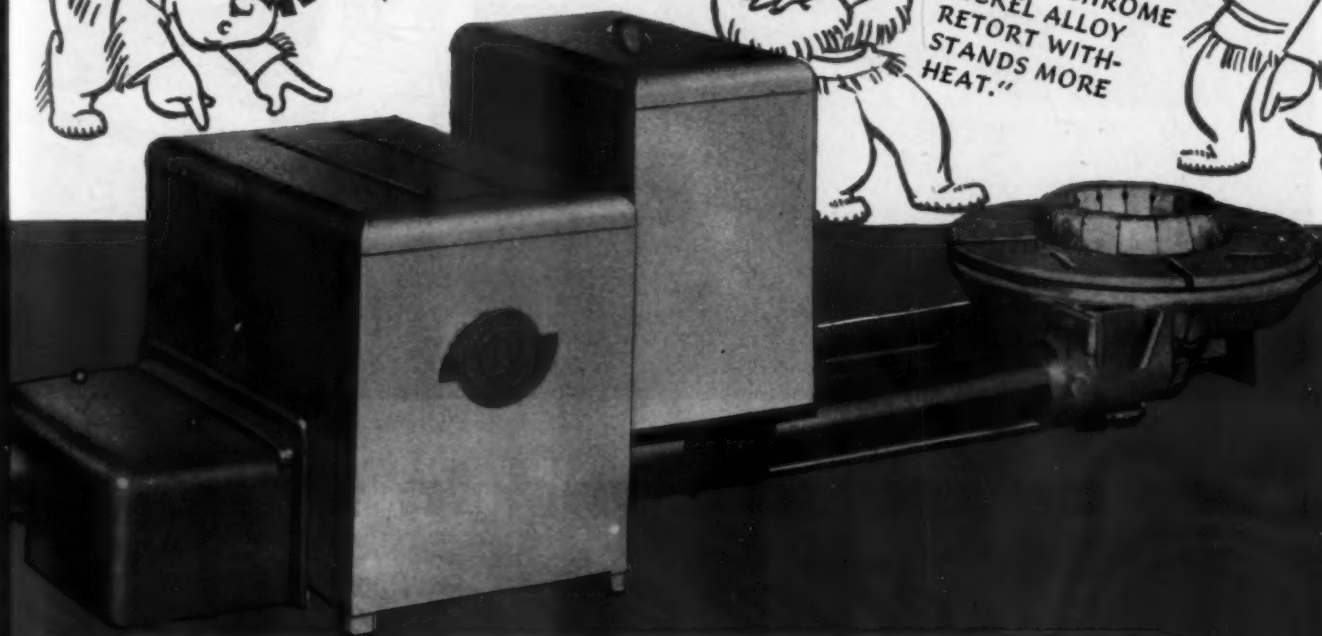


"NO BELTS—MAKES  
QUIET, COMPACT  
POWER UNIT—  
STREAMLINED TO  
HARMONIZE WITH  
POSTWAR HOME  
FEATURES."



"NO CLINKERS TO DIG.  
ASHES ARE REMOVED  
AUTOMATICALLY TO  
DUST-PROOF CON-  
TAINERS."

"LIFETIME" CHROME  
NICKEL ALLOY  
RETORT WITH-  
STANDS MORE  
HEAT."



**I**F you are in the heating business, your experience will coincide with ours in the discovery that what the public wants is completely automatic *bin-feed, ash removal* equipment for bituminous coal. You and we have a big stake in this future market. As the world's largest producers of smokeless fuel, we have spent many thousands of dollars in the development and perfection of the Pocahontas Automatic Domestic Stoker. Today thousands of these are in operation in homes everywhere. We are convinced by the success of this equipment and the rising universal interest in ash removal stokers, that our convictions were right. We would like, therefore, to send you full information on this remarkable stoker. Feel free to write us. There is still good territory open. We are making only a limited number of stokers, but regardless of this, now is the time to investigate.

POCAHONTAS FUEL COMPANY INCORPORATED, 338 E. 131st St., Cleveland 8, Ohio



INO  
TOK





## Like an extra hand in the shop ... *at no extra expense*

**Yes**, there's an extra hand at work—and without boosting the payroll—when you use Bethlehem Steel Sheets. That's because Bethlehem Sheets are so uniform and dependable—so readily formed and seamed—so ductile and easy on dies.

Bethlehem Sheets make friends wherever they go. In heating and ventilating and general sheet-metal

contracting shops, in plants where stamped and formed products are made, men who know their sheets know that Bethlehem Sheets show consistently top-notch performance.

Put the extra hand to work in your shop. Plan to use Bethlehem Sheets. There's a type and gage in this full line to suit your needs—and to do a bang-up job for you.

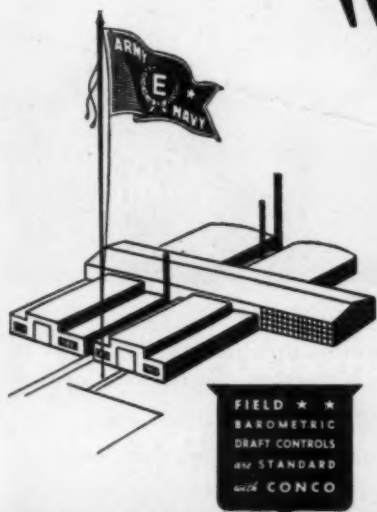
BETHLEHEM STEEL COMPANY, General Offices, Bethlehem, Pa.  
*Bethlehem Steel Export Corporation, New York City*



# Bethlehem Steel Sheets



## "HOSTAGE"



FIELD ★ ★  
BAROMETRIC  
DRAFT CONTROLS  
BY STANDARD  
with CONCO

This trade-mark on any heating unit is, in itself, a guarantee of fine quality, fair dealing, fair prices, research, stability. It is, in a sense, a hostage we place in your hands and in the hands of your customers. For the CONCO-HEAT trade-mark is worth a small fortune; we cannot place it on any but the finest heating product. And so you have, in the complete CONCO-HEAT line, carrying the familiar CONCO-HEAT emblem, a solid foundation on which to build for the future — a future in which CONCO-HEAT will come to mean BETTER HEAT to more and more people. A few choice territories are still open for aggressive, far-sighted distributors. So write today, or wire, for the full story on the CONCO-HEAT line. It's a name with a future — for you.

BUILDERS OF A COMPLETE HEATING LINE



DOMESTIC



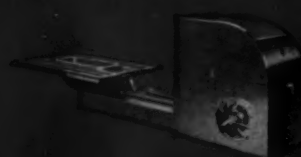
STEEL



OIL-FIRED



GAS-FIRED



COMMERCIAL

CONCO ENGINEERING WORKS • MENDOTA, ILLINOIS

# HONEYWELL

# *Announces!!*

## **SERVICE SCHOOLS**

IN PRINCIPAL LOCALITIES

*for*

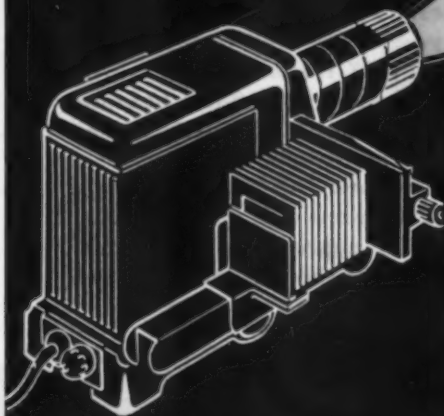
**INSTALLATION MEN**

**SERVICE MEN**

**SALESMEN**

**STUDENTS**

**HEAT IN HAR**



**V**IRTUALLY everyone in the automatic heating industry has recognized the need for a training course for installation and service men. Minneapolis-Honeywell, however, is the first actually to make such a course available on a national basis. This course has been prepared by Honeywell engineers with the help of America's most outstanding organization in the field of visual education. It has been in preparation for more than a year and covers every phase of automatic heating control and its application. Schools will be conducted in principal cities throughout the country and will be available, without cost or obligation, to all interested. Fill in and send the registration form at the right. You will be advised when schools will be opened in your locality.



# A GREAT EDUCATIONAL and TRAINING PROGRAM

*Enroll Now...* Fill in and send the blank today. You will be notified where and when your school will be conducted

*Watch  
for  
Details*

MINNEAPOLIS-HONEYWELL  
offers a complete course  
in automatic controls  
and their applications  
...including **MODUFLOW**

## MINNEAPOLIS-HONEYWELL

2726 FOURTH AVENUE SOUTH  
MINNEAPOLIS, MINNESOTA

DATE \_\_\_\_\_

☐ Please enroll me in the Honeywell Control  
Course "HEAT IN HARNESS"

☐ Please give me additional information.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_  
(ZONE)

COMPANY \_\_\_\_\_

POSITION \_\_\_\_\_ PHONE \_\_\_\_\_

# POWER YOUR post-war selling with **MONCRIEF**

When you set your goal for post-war business— *set it high*. With Moncrief you *can* set your goal high. Why?

- ✓ For more than 50 years Moncrief has helped thousands of dealers make money.
- ✓ These 50 years have given Moncrief the "know-how" in building and merchandising quality heating equipment, furnace pipe and fittings.
- ✓ The Moncrief aim has always been to deliver the biggest possible dollar value.
- ✓ The name Moncrief symbolizes heating satisfaction to hundreds of thousands of Moncrief owners.
- ✓ Moncrief will continue to maintain sound, progressive product design and merchandising plans which will keep Moncrief a leader in the heating industry.

Set your post-war sales goal high. You can, if you'll power it with Moncrief.



**WARM AIR FURNACES  
FURNACE PIPE • FITTINGS  
AIR CONDITIONING UNITS • COAL • GAS • OIL**

## THE PRE-WAR MONCRIEF LINE OF FURNACES AND AIR CONDITIONING UNITS



Series C  
Coal Fired Cast  
Gravity Furnace



Series 600  
Coal Fired Steel  
Gravity Furnace



Series C  
Coal Fired Cast  
Gravity Furnace



Series S  
Coal Fired Cast  
Air Conditioning Unit



Series G  
Gas Fired Cast  
Air Conditioning Unit



Series GG  
Gas Fired Cast  
Gravity Unit



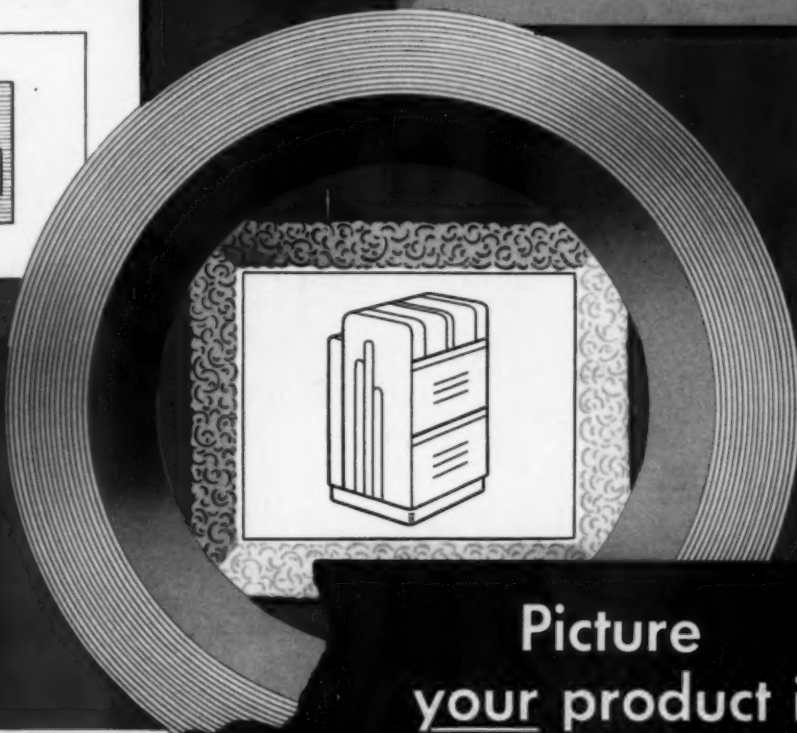
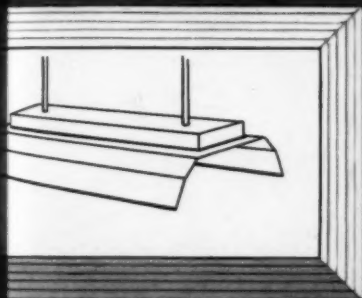
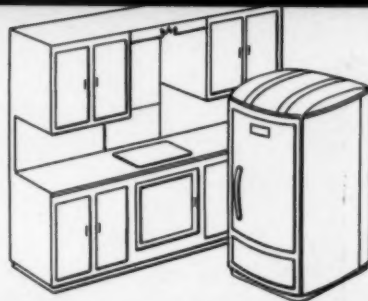
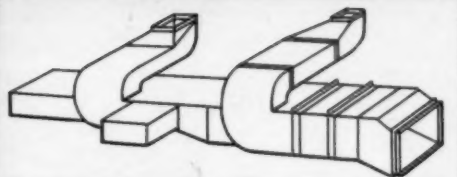
Series HGG  
Gas Fired Cast Utility  
Air Conditioning Unit



Series Special  
Oil Fired Steel  
Air Conditioning Unit

**THE HENRY FURNACE CO.**

**MEDINA, OHIO**



Picture  
your product in

**Weirzin**

ELECTROLYTIC ZINC COATED SHEETS AND STRIP

Have you considered the *net* results of using Weirzin to build *your* product? Here is how one manufacturer profited. (1) He eliminated inventory loss due to rust. (2) He cut pickling, cleaning and buffing operations. (3) Because of the absolute uniformity of Weirzin and its availability in *coils* he speeded and smoothed his production. (4) Because of the high ductility of the Weirzin steel base sheet and

the tightness and malleability of the coating, *deep drawing* was accomplished *easier* and with a complete absence of peeling, flaking or powdering. (5) The surface of Weirzin had a better "tooth" for decorative finishes and his finished product had a much greater resistance to high temperatures, high humidity and *rust* . . . It may pay *you* to check on Weirzin. Write for technical booklet—today.



**WEIRTON**



**STEEL CO.**

WEIRTON, W. VA. Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.





# Climatrol

REG. U. S. PAT. OFF.

## BY MUELLER

*Makes  
You a*

## "Comfort Merchant"

**and that's the keynote of  
your post-war success . . .**

Comfort depends primarily on conditioning of air—and that is what you are selling when you feature Mueller Climatrol winter air conditioners.

Conditioning of air may be accomplished in these six ways:

- |   |  |
|---|--|
| 1. Temperature control.                               | 2. Humidity control.                     |
| 3. Proper movement of air.                            | 4. Introduction of fresh air.            |
| 5. Removal of dust, pollen, and other foreign matter. | 6. Removal of bacteria conveyed on dust. |

The Mueller Climatrol system is *basically designed to handle and condition air*. That means that you *start your customer in the right direction*. Later he may add accessories to deliver more of the six comfort factors, as these accessories are perfected and become available.

Mueller offers you the most complete warm-air line on the market. Mueller's 88-year performance record is your assurance of satisfied customers and a reputation for successful installations. Nationally-known, nationally-advertised. Write for bulletins. L. J. Mueller Furnace Co., 2010 West Oklahoma Ave., Milwaukee 7, Wis.



*There are Mueller units  
for old or new homes of  
every size, type, and  
price range.*



D-49

**Specially designed for efficiency with  
the chosen fuel — gas, oil, or coal.**

# NEED A QUICK "pick-me-up" FOR YOUR SERVICE BUSINESS?



## Build profitable business in MAY and JUNE with a simple DUST-STOP\* promotion!

Now that winter has passed for another year (and you can again answer the phone without fearing it's another customer demanding "quick service" on his furnace), why not decide now to level off next winter's peak load by getting some of this service business *early*—in the next month if you wish, and all through the summer.

Two timely DUST-STOP mailing folders, *available free*, can help you get into *forced-warm-air-heated homes*. And not only will you make a nice profit on the filters you sell, but you'll have an opportunity to line up furnace cleaning and repair jobs that otherwise might not break until next winter when you may be too busy to want them. Ask your Dust-Stop Supplier how you can put these colorful and effective pieces to work for you!

Owens-Corning Fiberglas Corporation, 1930  
Nicholas Bldg., Toledo 1, Ohio. In Canada,  
Fiberglas Canada Limited, Oshawa, Ontario.



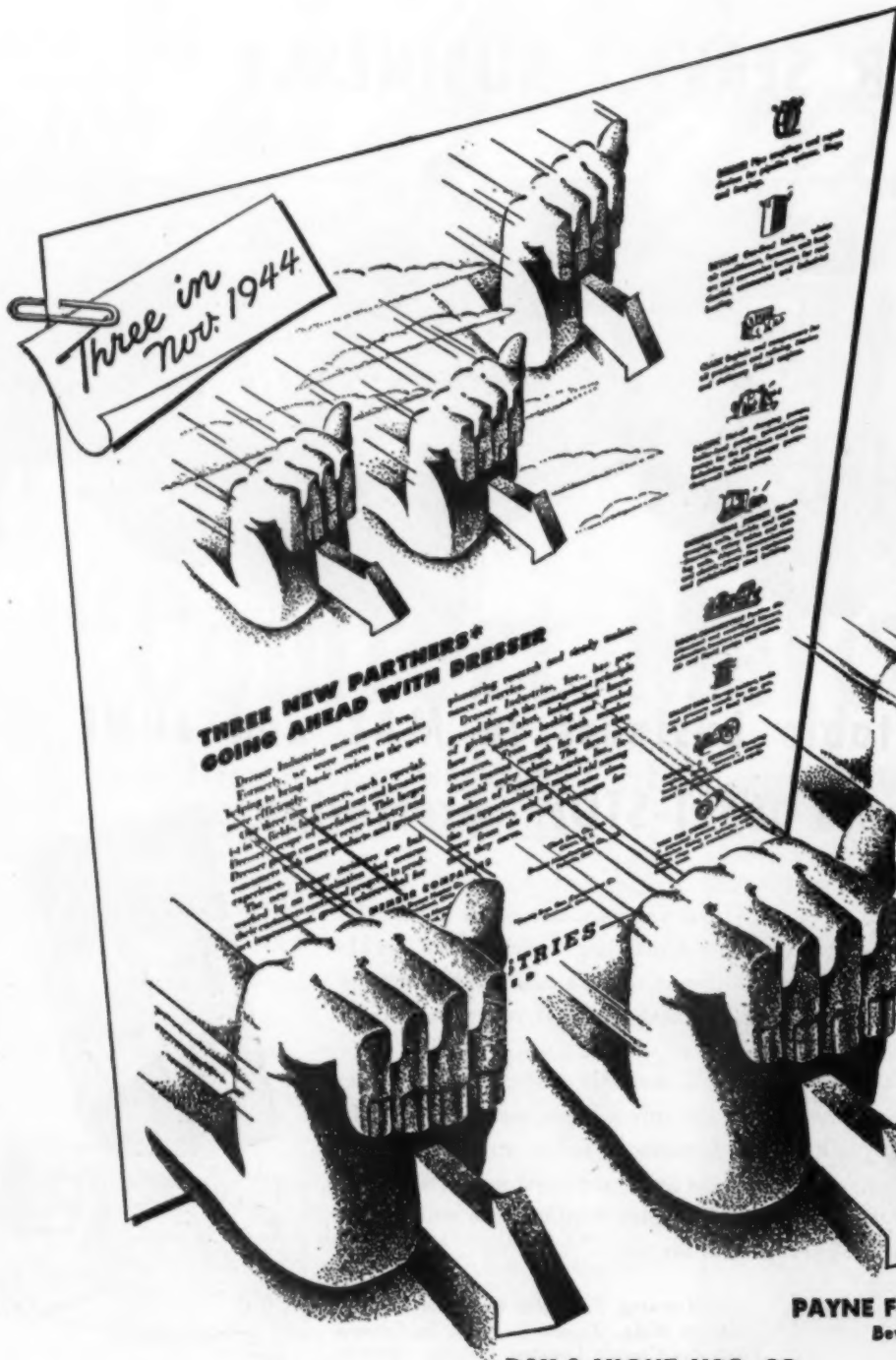
# DUST-STOP

\*T. M. Reg. U. S. Pat. Off.

## AIR FILTERS

—a FIBERGLAS product

Every owner of a forced-warm-air  
furnace needs two or more Dust-  
Stop Filters—at least once a year.



DRESSER Mfg. Division, Bradford, Pa.

BRYANT Heater Company, Cleveland, Ohio

DAY & NIGHT MFG. CO.  
Menreia, Calif.

CLARK Bros. Co., Inc., Olean, N. Y.

INTERNATIONAL DERRICK & Equipment Co.  
Columbus, Marietta and Delaware, Ohio;  
Beaumont, Texas; Torrance, Calif.

KOBE, INC.  
Huntington Park, Calif.

PAYNE FURNACE COMPANY  
Beverly Hills, Calif.

PACIFIC Pumps, Inc., Huntington Park, Calif.



# ...again three more

## BECOME PARTNERS IN

# DRESSER INDUSTRIES, INC.

ROOTS-CONNERSVILLE Blower Corp.  
Connorsville, Ind.

STACEY BROS. Gas Construction Co.  
Cincinnati, Ohio

BOVAIRD & SEYFANG Mfg. Company  
Bradford, Pa.

DRESSER Manufacturing Co., Ltd.  
Toronto, Ont., Canada

VAN DER HORST Corp. of America,  
Olean, N. Y. and Cleveland, Ohio

Dresser Industries continues its growth toward more efficient, more comprehensive service to customers. Three new partners now enlarge our scope of usefulness to the gas and oil industries.

Day & Night Manufacturing Co., supplies a remarkably efficient hot water heater for the home. Payne Furnace Company is unexcelled, particularly throughout the West, for its gas-fired steel heating equipment. These two companies perfectly complement and augment Bryant Heater Company, a Dresser Industries member which for 35 years has produced fully automatic, quality gas-fired heating appliances, most extensively used in the East.

Kobe, Inc., makes an ingenious hydraulically actuated oil-well pump, a fundamental development in view of the nation's need to go ever deeper for oil. This pump dovetails with oil-well drilling and production equipment offered by two other Dresser Industries members, Pacific Pumps, Inc., and International Derrick & Equipment Company.

Dresser Industries is now a team of thirteen companies pooling their resources for better products, better service to their customers.

Dresser Industries, Inc.

Terminal Tower, Cleveland 13, Ohio

# Are you one to PEEK around corners?



If you are the type of dealer who is inquisitive enough to look around, keeping an eye open for tomorrow's sales — you have probably already picked the Rudy line.

Prosperity for you is around the corner that leads to Rudy, for the Rudy line has been making customer-friends for over 30 years with honest values, genuine comfort and economical operation.

We too have been looking around corners — to the day when civilian production will be renewed — and Rudy dealers will profit from the many engineered advancements in design and performance. Don't wait until the boom sales are on you — write for details on the Rudy Franchise today.

## AVAILABLE NOW!

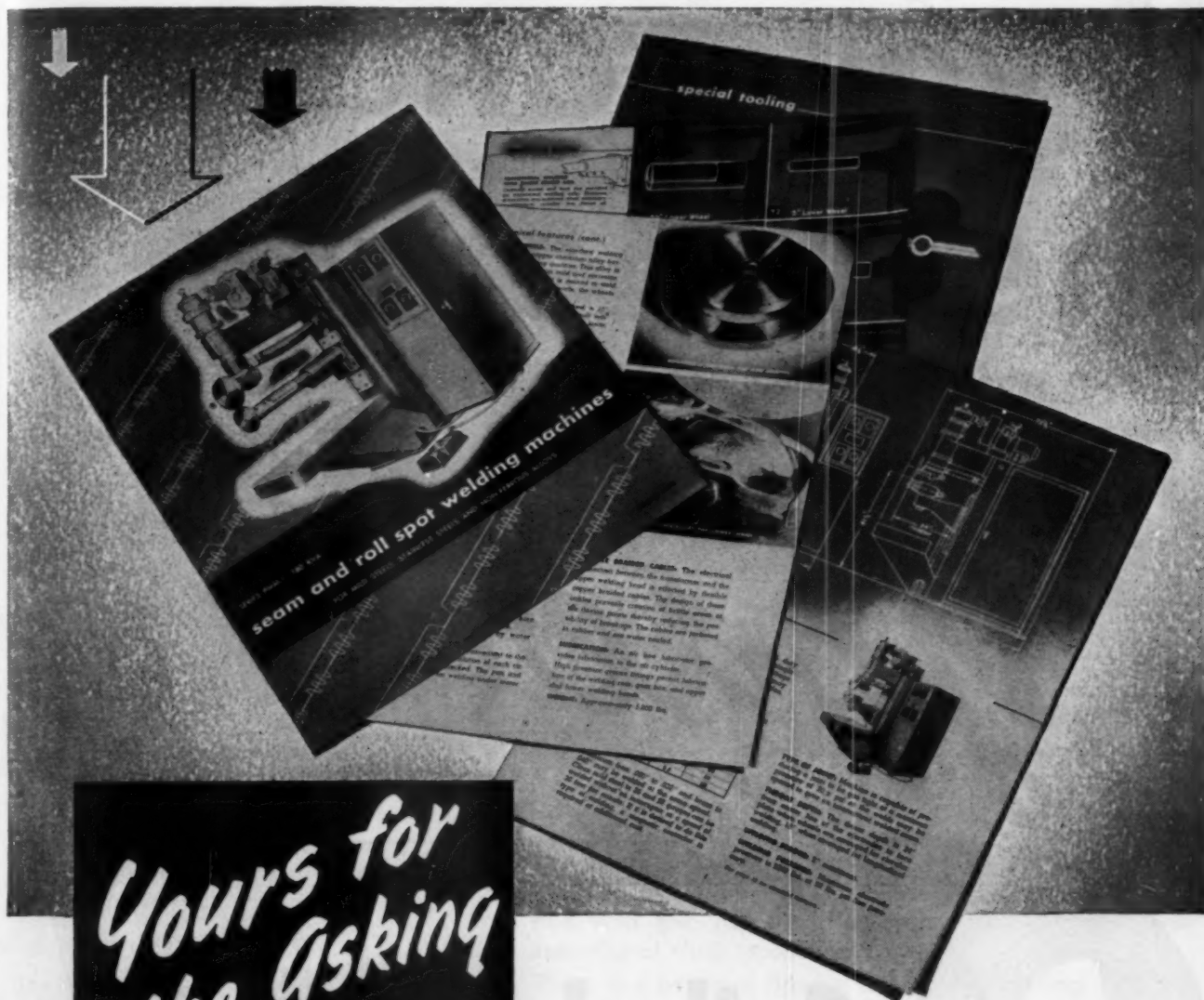
A real profit-maker — the new Rudy XM Series steel coal gravity furnace. Genuine Rudy sturdiness and dependability welded and riveted with heavy 26 gauge galvanized steel casings and hood. Supply is limited — write for full details.



FURNACE COMPANY • DOWAGIAC, MICH.



EVEN FINER **RUDY** PRODUCTS FOR THE WORLD OF TOMORROW



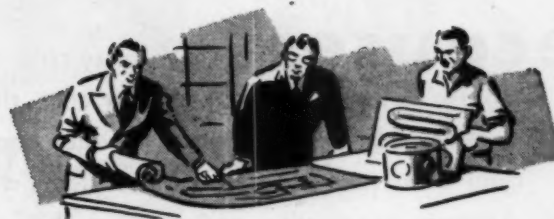
*Yours for  
the Asking*

## to help you choose the right seam welder for the job

**T**HIS 24 page booklet fully describes 3 of Sciaky's new 180 KVA seam welders. Included is much general information, tooling data and application suggestions. **Seam welding** can produce pressure-tight lap joints or a series of closely spaced spot welds at **great speed**. The booklet is designed to help you fit this fast, modern fabricating method into your production problems.

Sciaky machines are built with the stamina of a machine tool . . . to stand up under day in and out operation. Control is entirely electronic and the welder is a complete, self contained unit.

Just fill in and mail the coupon for your copy of bulletin 113-A.



Sciaky Bros.  
4915 W. 67th St.  
Chicago 38, Ill.

Yes, please send your bulletin No. 113-A, describing the new Sciaky 180 KVA Seam Welders.

Name \_\_\_\_\_ Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**SCI AKY BROS.**



# If you handle sheet metal

Whether you job it or fabricate it,  
make "doo Hickies" or duct work,  
ash cans or aircraft sections . . .

A *Yoder*



## Coiled Sheet Line will cut your costs

**because:** High quality cold rolled or coated sheet in coils is and will continue to be available at low cost, the stocking of coils is a simple, low cost matter and this fast, versatile Yoder equipment will run out and cut just the sizes you want just when you want them, without waste. Priced within the reach of jobbers, contractors and small shops... LET US TELL YOU MORE ABOUT IT.

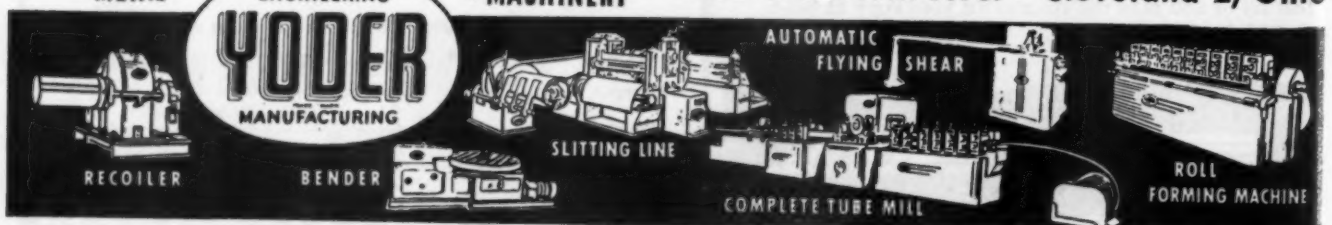
METAL • WORKING • PRODUCTION • MACHINERY

ENGINEERING

**YODER**  
MANUFACTURING

**THE YODER COMPANY**

5522 Walworth Ave. • Cleveland 2, Ohio



# EXPERIENCE

## HAS PROVEN THE EFFICIENCY

# OF THE *Gar Wood*

## TEMPERED AIRE IN ROCHESTER HOMES

### FUEL CONSUMPTION FAR BELOW AVERAGE

Average prewar Rochester area Gallons per square foot 1.65

Average Gar Wood Equipped Gallons per square foot .77

The homes illustrated are part of a group recently surveyed. All are equipped with Gar Wood heating systems installed by Redeker Bros. The data compiled in connection with the rationing program has revealed their sensational fuel economy.

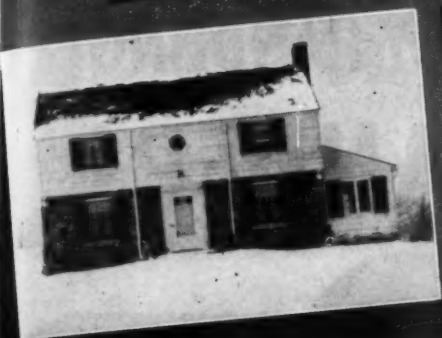
These are average figures, not the outstanding performance of one unusual installation.

The amazing oil economy of Gar Wood units is built in at the factory. It arrives in package form for the dealer to install.

INVESTIGATE THE GAR WOOD FRANCHISE FOR YOUR COMMUNITY

# *Gar Wood* HEATING DIVISION

GAR WOOD INDUSTRIES, INC.  
DETROIT 11, MICHIGAN



# If you handle sheet metal

Whether you job it or fabricate it,  
make "doo Hickies" or duct work,  
ash cans or aircraft sections . . .

A *Yoder*



## Coiled Sheet Line will cut your costs

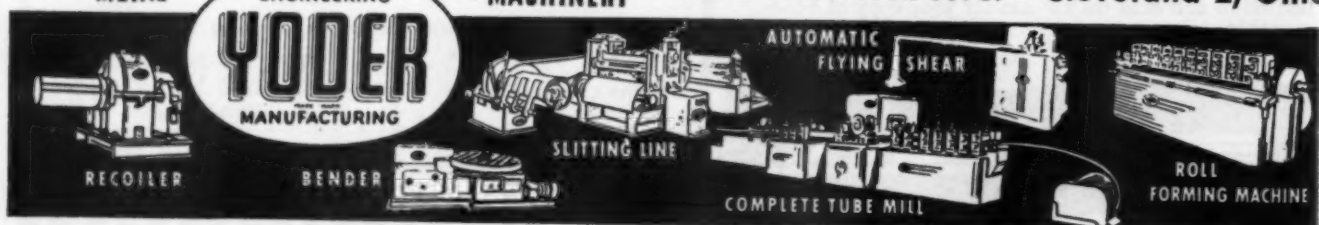
**because:** High quality cold rolled or coated sheet in coils is and will continue to be available at low cost, the stocking of coils is a simple, low cost matter and this fast, versatile Yoder equipment will run out and cut just the sizes you want just when you want them, without waste. Priced within the reach of jobbers, contractors and small shops... LET US TELL YOU MORE ABOUT IT.

METAL • WORKING • PRODUCTION • MACHINERY  
ENGINEERING

**YODER**  
MANUFACTURING

**THE YODER COMPANY**

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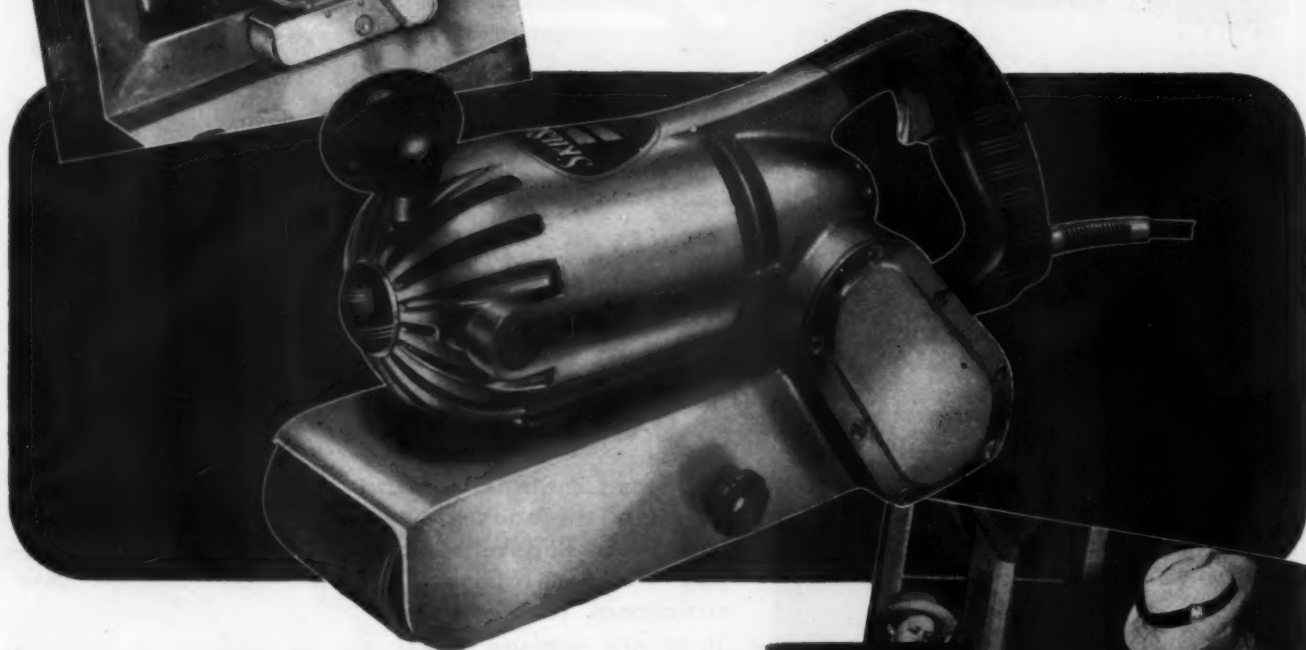
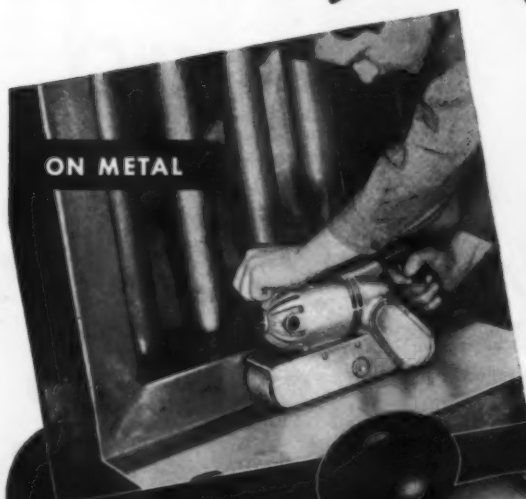
GAR WOOD INDUSTRIES, INC.

DETROIT 11, MICHIGAN



*On dozens of finishing jobs...*

**YOU'LL DO BETTER WORK  
WITH AN EASY-HANDLING  
SKILSANDER!**



● Belt Type SKILSANDERS are so light in weight, so powerful, compact and perfectly balanced that they make it easier for any workman to get a finer finish faster on all flat surfaces of wood, metal or compositions.

And to help you *keep your costs down*, SKILSANDERS are *quality-built* throughout to last longer and operate for less with a minimum of servicing.

Ask your distributor to show you on your own work how Belt Type SKILSANDERS will save time, labor and material handling. Phone him today for a demonstration.

**SKILSAW, INC.**

5033-43 Elston Ave., Chicago 30, Ill.

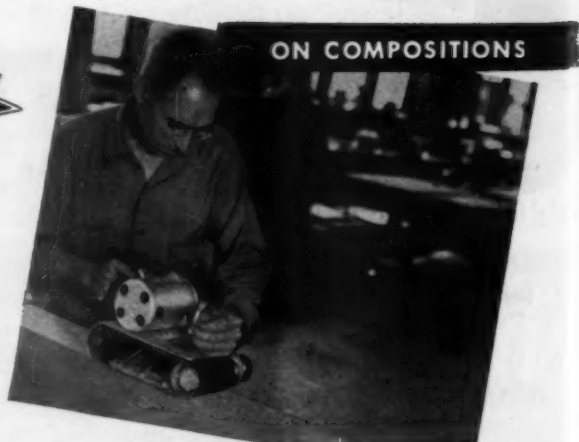
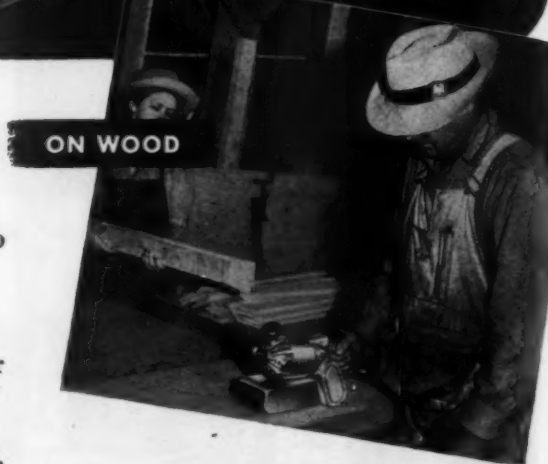
Factory Branches in All Principal Cities



PORTABLE ELECTRIC

**SKILTOOLS**

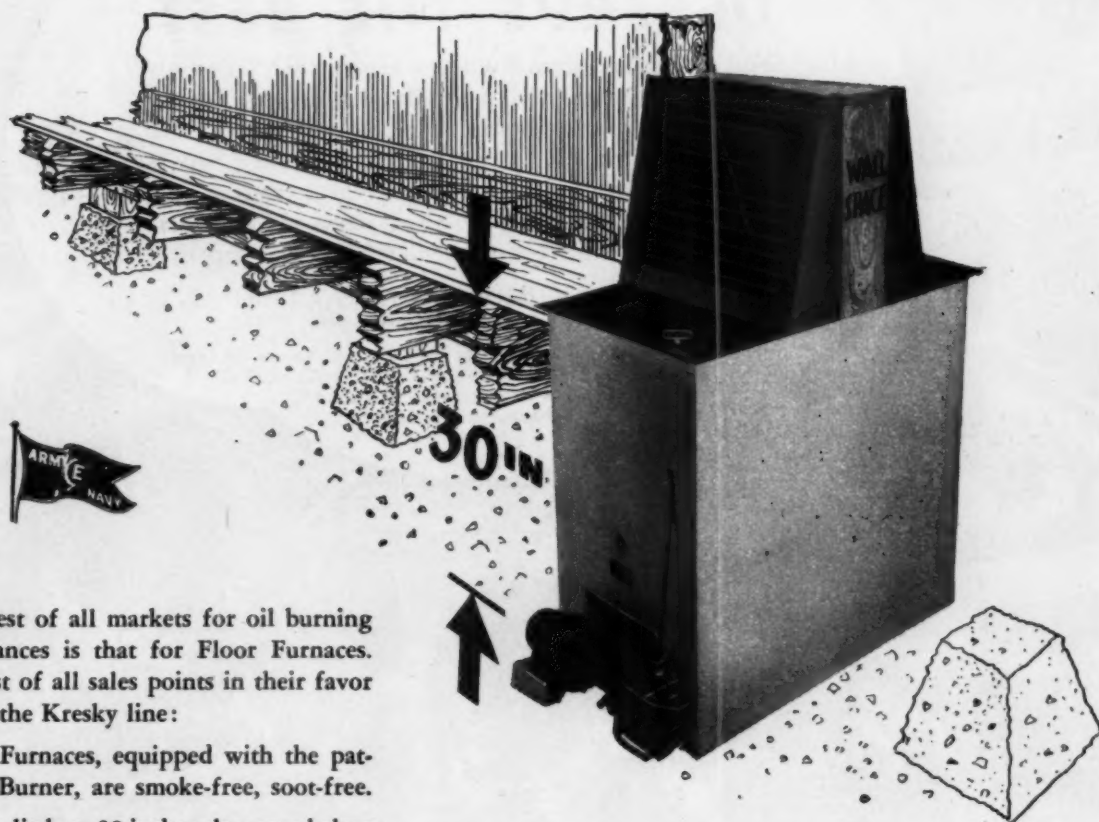
MADE BY SKILSAW, INC.



# KRESKY

## OIL-FIRED FLOOR FURNACES

### *Excel Six Ways*



One of the biggest of all markets for oil burning household appliances is that for Floor Furnaces. And the strongest of all sales points in their favor are possessed by the Kresky line:

1. Kresky Floor Furnaces, equipped with the patented Kresky Burner, are smoke-free, soot-free.
2. They require as little as 30 inches clearance below the floor.
3. There are both floor and dual wall register models.
4. They are available with either manual or automatic control.
5. They are made in four different BTU capacities.
6. They function efficiently on as little as .02 draft.

Kresky has been leading in the development of oil burners and oil burning appliances for nearly forty years. It has a reputation for sound design and dependable construction. And its line has the variety you need for an active, growing business: Floor Furnaces, Space Heaters, Ranges, Basement Furnaces, Hot Water Heaters and Conversion Burners.

**DISTRIBUTORS** Look into this long-established, well varied, money-making line!

*We're getting set for the nation-wide distribution of double our pre-war output. Write us for the terms of a Kresky franchise now!*

**KRESKY**  
**MANUFACTURING CO.**

Pioneers in Oil Burning Equipment Since 1910  
PETALUMA CALIFORNIA



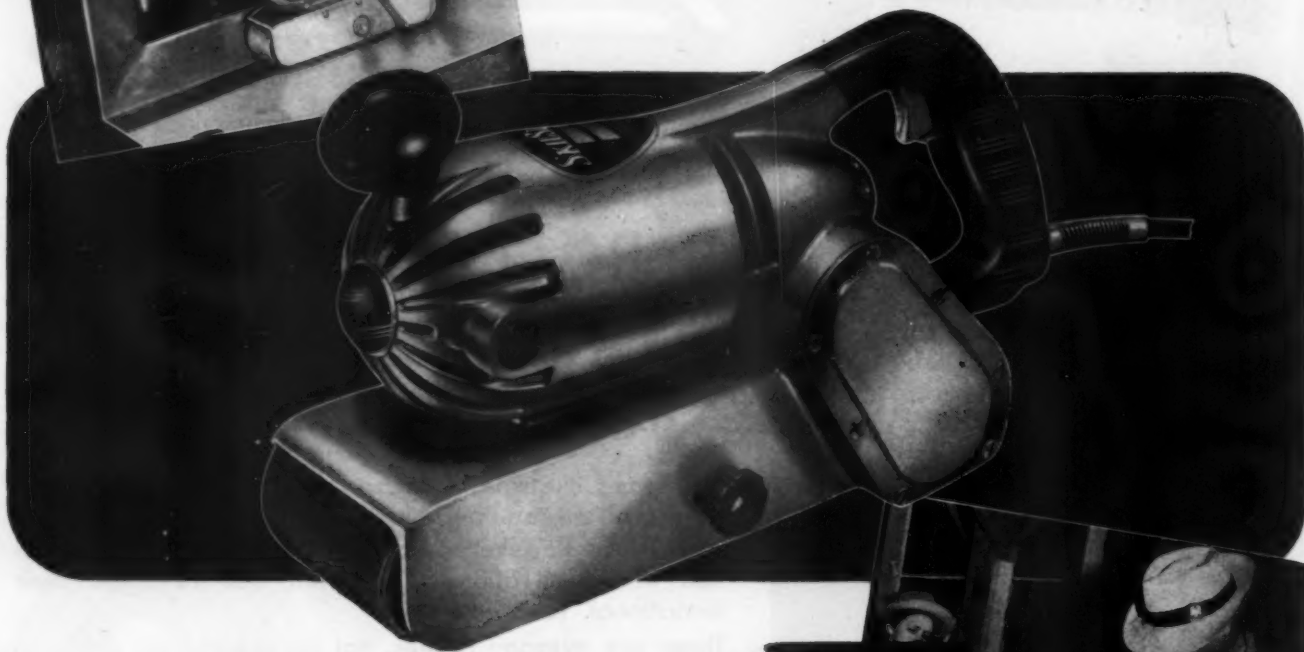


*On dozens of finishing jobs...*

**YOU'LL DO BETTER WORK  
WITH AN EASY-HANDLING  
SKILSANDER!**



ON METAL



• Belt Type SKILSANDERS are so light in weight, so powerful, compact and perfectly balanced that they make it easier for any workman to get a finer finish faster on all flat surfaces of wood, metal or compositions.

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5033-43 Elston Ave., Chicago 30, Ill.

Factory Branches in All Principal Cities



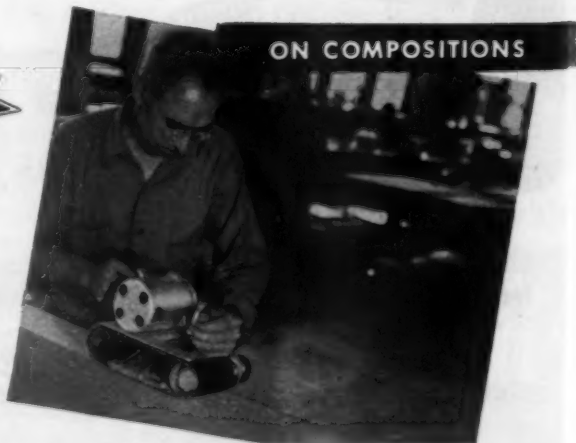
PORTABLE ELECTRIC  
**SKILTOOLS**

MADE BY SKILSAW, INC.

ON WOOD



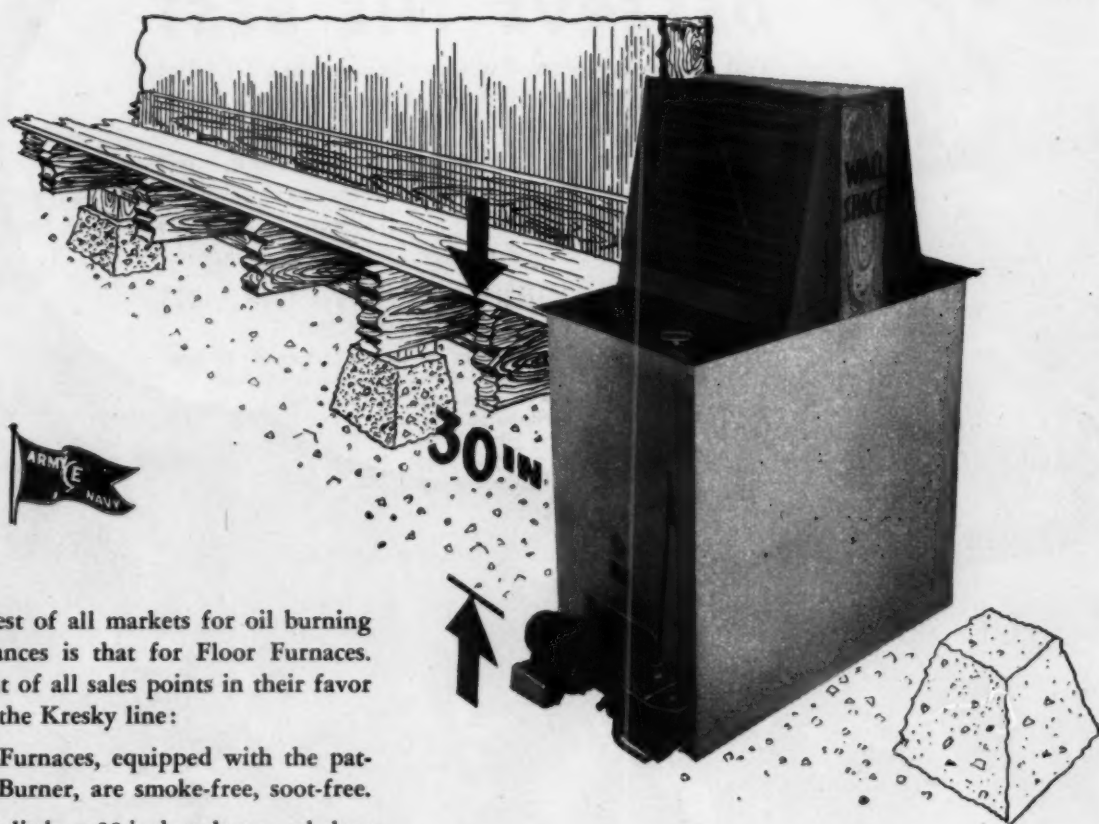
ON COMPOSITIONS



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**KRESKY**  
**MANUFACTURING CO.**

Pioneers in Oil Burning Equipment Since 1910  
**PETALUMA CALIFORNIA**



## **Your Customers DESERVE THE BEST**

You can assure them the best when you use Wheeling Galvanized Sheets and Sheet Metal Products. For 55 years Wheeling has been producing high grade sheet metal products, and has never deviated from this policy. War requirements have limited the quantities and they may not be sufficient to fill all demands, but when available, you have the regular Wheeling quality.

**WHEELING CORRUGATING COMPANY**  
WHEELING, WEST VIRGINIA

New York • Philadelphia • Chicago • St. Louis • Richmond • Atlanta  
Kansas City • Minneapolis • Buffalo • Louisville • Detroit  
Boston • New Orleans • Cleveland  
Pittsburgh • Houston



### **CHECK WITH YOUR WHEELING REPRESENTATIVE ON:**

✓ Black & Galvanized Sheets    ✓ Tin & Terne Plate  
✓ Long Terne Sheet    ✓ Conductor Pipe & Fittings  
✓ Eaves Trough & Fittings    ✓ Roof Gutters & Fittings  
✓ Galvanized Roofing & Siding  
✓ Valleys & Gutters    ✓ Ridge Roll    ✓ Flashing  
✓ Furnace Pipe & Fitting    ✓ Wire    ✓ Wire Nails  
✓ Cut Nails    ✓ Steelcrete Expanded Metal





# CHRYSLER AIRTEMP



200-TON HYDRAULIC PRESS IN THE CHRYSLER AIRTEMP PLANT

## *Geared for Big Production*

When Chrysler Airtemp was called upon to produce heating, cooling and refrigeration for our Armed Forces, its batteries of specially designed machine tools were quickly put to work. These same facilities assure efficient production of peace-time products on a quality-volume basis. Just as Chrysler Airtemp pioneered the "Packaged" Cooling Unit, it likewise pioneered the Combination Heating and Cooling Unit for the home. Chrysler Airtemp manufactures a complete line of heating equipment—steam, hot water and warm air, using all types

of fuel. With proven designs and a background of performance, Chrysler Airtemp is in a position to offer the American public better products at lower cost.

The Chrysler Airtemp Triple Line . . . Heating, Cooling, and Commercial Refrigeration . . . offers heating dealers a very unusual opportunity for 12 months' profitable operation. Remember, direct dealer agreements will be available for any single Chrysler Airtemp Line . . . any two lines . . . or for all three lines. • Airtemp Division of Chrysler Corporation, Dayton 1, Ohio.



### THE 4 FUNDAMENTALS of CHRYSLER AIRTEMP DEALER OPERATIONS

1. Engineered Installation
2. Proper Display
3. Outside Selling
4. Customer Service



Buy More War Bonds: Tune in Major Bowes every Thursday, CBS, 9 p.m., E.W.T.

HEATING • COOLING • REFRIGERATION

**YOU'LL FIND PROFIT IN A PACKAGE....**



## *Packaged Heat* **IS BETTER, TOO!**

Modern selling demands a *package* for easy, profitable handling. That's true of sugar, and it's true of heating units.

The dealer selling Penn Packaged Heat handles a completely factory-assembled appliance much like the modern radio, refrigerator or washing machine . . . whether the burner is gas or oil-fired . . . whether the unit is a boiler-burner, forced warm air or split system.

This progress, based on exclusive patents, adds up to more dealer profits in many important ways. Since all Penn units are 100% self-contained, factory pre-fabri-

cated and fire tested before shipment, you get them in one crate, ready to "pick up, set down and plug in." Penn Packaged Heat thus eliminates costly, cluttered parts inventories, cuts out engineering guesswork, reduces labor of assembly installations up to 90%.

There's a size and type of Penn Packaged Heat for needs of from 4 to 30 rooms, units of proven design and efficiency. To learn in detail how Penn has put heat in a package, and more profits in the dealer's pocket, write today for "The Story of Penn Packaged Heat."

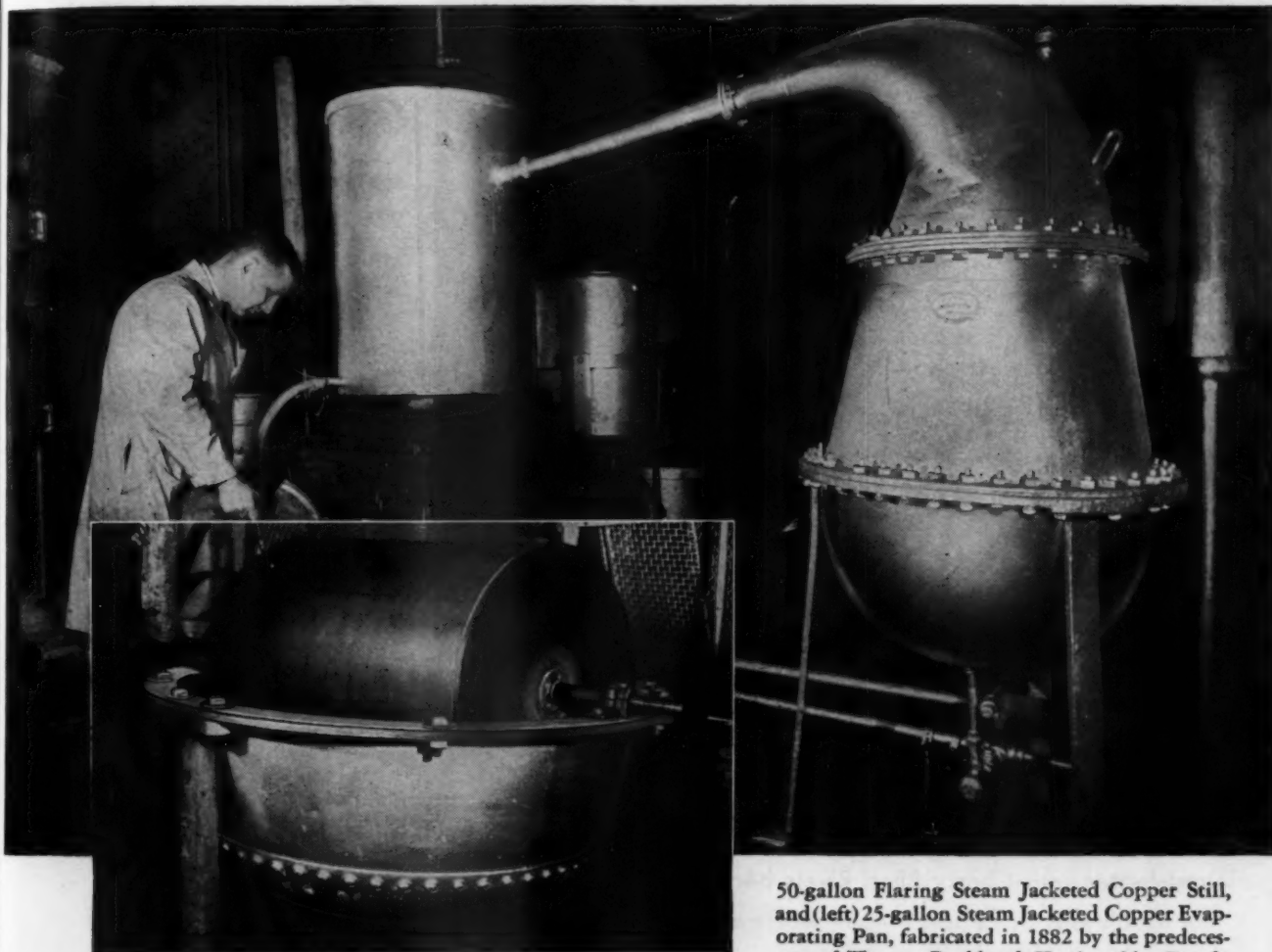


**PENN BOILER and BURNER MANUFACTURING CORP.**

**LANCASTER, PENNSYLVANIA**

# STILL GOING STRONG AFTER 63 YEARS... AND SO IS THE PAN!

A RECORD FOR ANY METAL IS THE SERVICE  
LIFE OF THIS COPPER EQUIPMENT



50-gallon Flaring Steam Jacketed Copper Still, and (left) 25-gallon Steam Jacketed Copper Evaporating Pan, fabricated in 1882 by the predecessors of Thomas Burkhard, Kettlesmiths, Brooklyn, N.Y. for Schieffelin & Co., New York. Below is a facsimile of the original quotation.

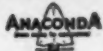
ON April 14, 1882 the already 88-year-old drug house of Schieffelin & Co. made what now turns out to have been a remarkable investment in processing equipment.

From the predecessors of Thomas Burkhard, the well-known Brooklyn Kettlesmiths, they ordered among other items a steam jacketed evaporating pan and a flaring jacketed still... both of copper "sufficiently heavy to withstand an actual working pressure of 80 lb."

Fine craftsmanship and thoroughly sound, corrosion-resistant metal have written themselves into the record. For today, as the photographs testify, after 63 years of service, these two units are still in operation.

## THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut  
Subsidiary of Anaconda Copper Mining Company  
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.



Keep Faith With Your Fighters and Yourself! Buy War Bonds

# Anaconda Copper & Copper Alloys







Riveting exterior of motor coach with pneumatic gun.

*A new, easier,  
and better way*  
**TO FASTEN  
SHEET METAL**



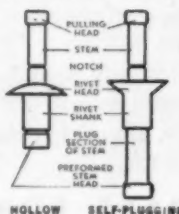
Assembling  
ventilator hood  
with  
Cherry Blind Rivets.



Cherry  
Blind Rivets  
are ideal for  
all duct work.

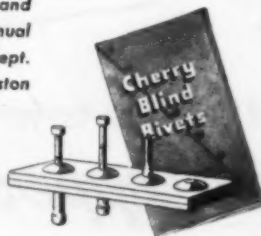
You can do your difficult sheet metal fastening easier, quicker and better with Cherry Blind Rivets because they are designed for tough jobs . . . upset by one workman even in the most difficult spots, without the use of a bucking bar. They have generous tolerances in hole size and material thickness.

They have a patented pulling head on the stem which allows the use of small, lightweight, easy-to-handle riveting guns. They will upset in all sheet metals, in many soft and brittle materials, in tubes, ducts, stringers and curved surfaces. Cherry Rivets eliminate the disadvantages of such fastening devices as solder, self-tapping screws, nuts and bolts . . . are tight, strong, durable fasteners.



Riveting in tube with G-35 Hand gun.

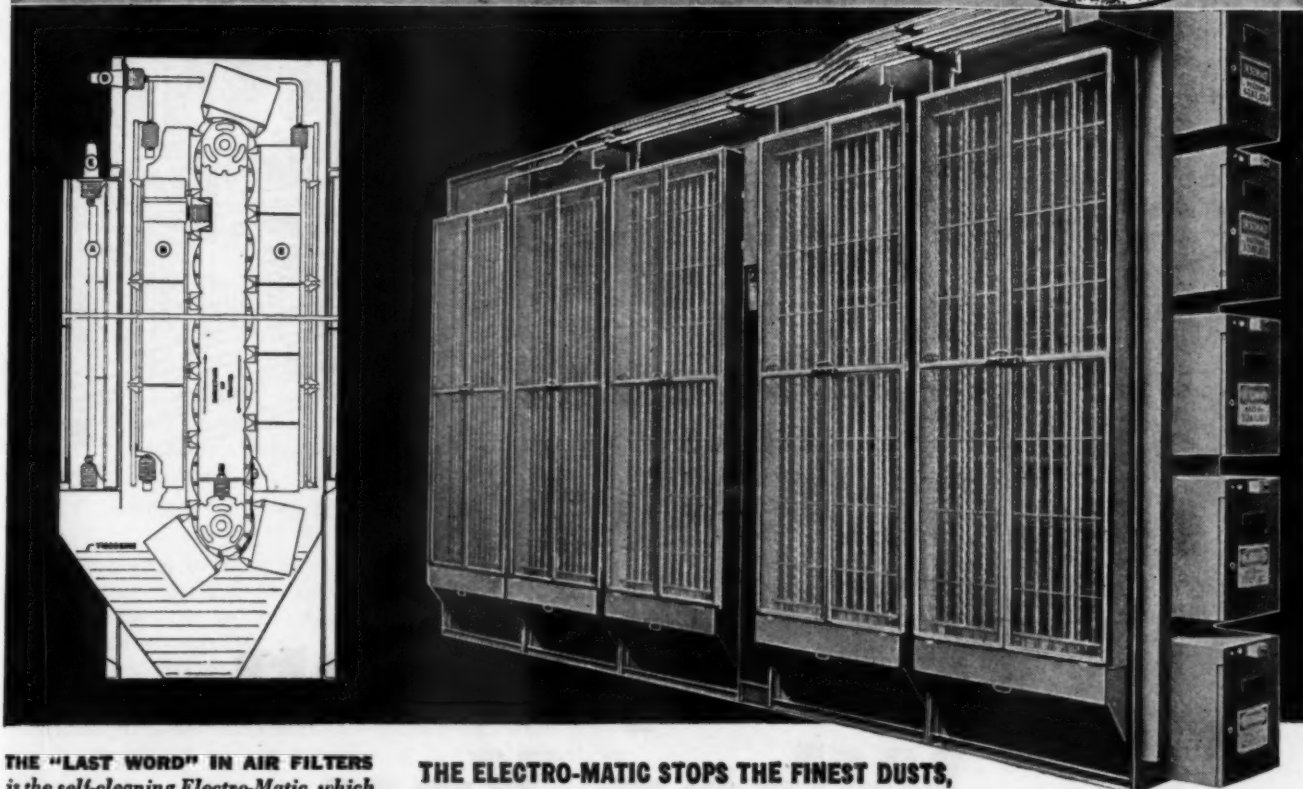
For a quick look at the many advantages and uses of Cherry Blind Rivets, write for Manual D-45 and metal demonstration panel, Dept. A-200, Cherry Rivet Company, 231 Winston Street, Los Angeles 13, California.



CHERRY RIVETS, THEIR MANUFACTURE & APPLICATION ARE COVERED BY U.S. PATENTS ISSUED & PENDING

**Cherry Rivet**  
*Company*  
LOS ANGELES, CALIFORNIA

# Super Clean Air



**THE "LAST WORD" IN AIR FILTERS** is the self-cleaning Electro-Matic, which is also outstanding because of the effectiveness with which it applies the principles of electronic precipitation. Dust laden air enters the ionizing unit (A) where all dust particles receive a positive charge. Then it passes through the continuous, belt-type filter curtain where, both at the front (B) and the back (C), dust particles are attracted to negative charged, oil coated filter plates. Plates are cleaned and re-oiled continuously as they pass through the oil bath in the base.

## THE ELECTRO-MATIC STOPS THE FINEST DUSTS,

**SMOKE, FUMES** and oil vapors. Particles so small they can be seen only with the new electronic microscope, are removed by the AAF Electro-Matic Air Filter. The Electro-Matic removes 85% of these fractional micron sized particles, providing super clean air. In addition to its high efficiency the Electro-Matic can operate continuously at maximum efficiency because it is self-cleaning, which avoids the need for stopping the filter to clean collector plates. Where really clean air is needed to meet production requirements or to give employees the very best of working conditions . . . the Electro-Matic is the answer. Write for Bulletin No. 250-C.

AMERICAN AIR FILTER COMPANY, INC., 355 Central Avenue, Louisville 8, Kentucky. In Canada: Darling Bros., Ltd., Montreal, P. Q.

**AAE**  
**ELECTRO-MATIC** THE ELECTRONIC AIR FILTER



# Call Ryerson When You Need Steel

Every type of steel from stainless to structurals is immediately available from Ryerson stock. Just reach for the phone and call any one of the eleven conveniently-located Ryerson service plants. Our operators will connect you at once with an experienced

service man who will see that you get the steel you need—when you need it.

JOSEPH T. RYERSON & SON, INC.  
Steel Service Plants: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

**QUICK, DEPENDABLE SHIPMENT**





## Get Ready for a Hectic Six Months

**D**URING the next few months, we should expect a period of uncertainty and confusion as war production schedules are unwound and reconversion gets started. There will be conflicting expressions and statements coming out of Washington and local offices of WPB will understandably be reluctant to pass judgment on specific appeals or questions.

Already, with V-E just a few days behind us, our newspapers are carrying statements claiming reconversion is all mapped and planned and conflicting news from business reporters who claim reconversion plans are in a mess.

At this moment we can put our teeth in only a few facts.

1. It seems certain that L and M orders will be revoked as rapidly as possible. L-22, the furnace order, is revoked, as an example. Some 90 orders are revoked as of May 10.

2. PR-25 (the spot authorization order) is reinstated. Some agencies profess to see in PR-25 the straight road to reconversion. Other agencies claim PR-25 won't be of much value or use to industries like ours.

3. No usable information has come from WMC or WLB or USES on the manpower problem. On manpower, some Washington reporters say there will be upwards of five million unemployed within four months; other reporters and agencies claim all this will be absorbed in war plants. The only point on which both are agreed is that unemployment will be "spotty"; in other words, there may be one town needing more workers and a nearby town with workers looking for jobs. Probably each reader will find his local conditions will determine whether he gets workers or not.

4. Steel, aluminum and copper (see Arnold Kruckman's Washington Letter in this issue) are said by some Washington higher-ups to be scarcer than ever and by others to be just on the verge of running out of our ears. No one knows who to believe. Probably what will happen is that certain types of steel or copper will ease up rapidly and other types remain tight. Readers will get the answer only from the mills or jobbers with whom they do business. And, of course, much will depend on how readers' orders

are now located on mill schedules. July 1 should see the answer.

5. CMP-4, the procedure under which manufacturing is conducted, remains in force, so far as we know, and will have much more of an influence on how many furnaces, etc., we produce than L and M orders which simply *permit* production. CMP-4 will determine how much material we obtain. On CMP-4 we anticipate reshuffling of materials allocations feeding more and more material into essential civilian goods as war goods are curtailed. It will take months for this reshuffling to stabilize.

6. The priorities *system* is right now under serious debate. Certain groups in Washington have all along felt that the war is only a period in which to try out *controlled economy* and that such a controlled economy should continue after the war. Other groups are convinced that only under a *free economy* can we employ 60 million workers and get a 150 billion annual pay roll. Unemployment and serious disarrangements in our national life will, probably, determine which group gains ascendancy. Meanwhile, and for the present at least, the thinking seems to be a revision of the priorities system whereby essential war needs are given a high priority and all lesser production turned loose to shift for itself in a free market.

After all is said, it is our belief that the matter of "timing," which we pointed out in the editorial in the April issue, is still and will be the most important single influence in our industry in the next six months. Generally speaking, our industry does not face the serious tool and equipment problems of industries like the automobile, and our manufacturers can, without too much delay, reach full production if we get the men and the materials.

But a plentiful supply of furnaces, gutters, equipment, six months from now does throw our customary schedule all out of gear. If we don't get needed items during the summer we will go into next winter with such a heavy order book that we won't be able to keep home owners comfortable or protected until next year.

Probably the thing for contractors to do is plan on scarcities for the next six months and devise ways of pushing our busy season ahead to next December and January.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Arnold Kruckman's

## Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



### Reconversion Just Can't Be Orderly

**"T**HE Army seems to think it is building up inventories and making ready for a war that will last 15 years," declared the head of one of the big WPB industry divisions when he came out of an inter-agency conference early in May.

About the same time, another director of a WPB division was insisting that within two to three months the trend towards reconversion would throw 5,000,000 war workers out of jobs and into the ranks of the real unemployed.

It was almost at the same time that the Chamber of Commerce of the United States emphasized the confusion and uncertainty in Washington by making a declaration publicly that estimates of cutbacks are dime a dozen in the Capital.

The Army has let it be known it expects there will be substantial cutbacks within 90 days. The Army also has announced it will cutback its own manpower by 2,000,000 men after V-E Day.

WPB has announced PR 24 is in operation, and that by its operation those who need key parts or machinery to prepare to blast bottlenecks when reconversion is under way, may prepare themselves for civilian production. WPB also has said that PR 25 (the spot authorization plan) has once again been made effective in all labor areas, Numbers 1 and 2, as well as in Numbers 3 and 4. And it has said that controls, especially L and M Orders, will be rubbed out swiftly, even by the hundreds. But with steel, lumber, textiles scarce, this may not mean much.

#### Armed Forces Needs

Al Smith used to say, "Let's look at the record." In this case it may be clarifying to look at the facts. Reconversion means availability of facilities and materials and manpower to make things for civilians. There are a number of industries which have facilities but cannot get manpower or materials. The thought is natural that cutbacks mean free materials and free manpower. On the other hand, announced cutbacks and actual cutbacks are scarcely the same. It is reasonable to assume that actual cutbacks will be conditioned by military policies. Military policies about cutbacks will naturally be conditioned by studies of the results in Europe and of the needs in Asia, in the light of military technology, transport problems, and political equations.

War Department told the Congress, and the Congress told the taxpayers, that at least 5,000,000 more troops—over and above marines and naval personnel—will be sent to Asia. In addition to these conditioning

influences, Army also must take into account domestic consumer pressures for long postponed needs such as furnaces and other heating equipment. These consumer pressures, when they are vigorous, have just as much effect upon the uniformed Government personnel as they have upon the civilian government officials.

Bear in mind, also, there is potential commercial competition across the Atlantic. WPB officials tell us that the United Kingdom released its plants for civilian production last winter or last fall. The British did not regard the last German drive as important or dangerous. In other words, the Battle of the Bulge did not affect them as it affected us last winter when we dropped all reconversion plans with a deafening bang. We also have been urged to remember the stupendous relief program for Europe, which has a priority before our civilian needs and which includes almost everything from pins, through food and chemicals, to trucks and buildings. And it is suggested we remember that it will take something to support and maintain the hundreds of thousands of troops which are to remain in Europe. The Russians very likely will use the German facilities to get civilian production going locally all over Europe, but when it gets going it is not expected to help us.

#### Time Needed for Readjustment

This all means, from the standpoint of those who see things as the military see them, that the Army will need some time to readjust, to crystallize new plans, to make fresh schedules for the supply of the new types of munitions, equipment, clothes, shelter, food, supplies, as they are required in Asiatic campaigns. According to the school of thinkers who agree with this reasoning, it seems clear that cutbacks will sound real but may be only apparent. It is logical, despite checks and non-military influences, that the Army will seek to pacify the civilian and yet keep as much of the capacity for production at standby as possible, and keep inventories of materials frozen as may be needed, and immobilize war workers who may still be needed.

It is during this interval of standby plants, manpower and materials, during the reconversion from European to Asiatic warfare, and the pressure for reconversion from military to civilian economy that we are expected to have troubles.

There are two schools of thought. The military, and many civilians, feel it would be elemental wisdom to hold things inert, to pay war workers even though



they do little work, and to let a trickle of civilian products gradually seep through to relieve the pressure for civilian needs. As soon as the needs for the Asiatic war are more definite, even before they are fully clarified, in a few weeks it is possible there may be a new drive for more war production and for less relaxation of controls. The President has not yet made clear where he stands. As head of the Truman Committee he opposed domination of the civilian economy by the military and he was notably unconvinced about Army requirements.

### **Much Planning Needed**

In the highest brackets of WPB they apparently still sympathize with the Army. The Orders they have revoked mean next to nothing, and they are apparently moving cautiously until someone, somewhere, gives them a basis for a clear policy. In the less elevated brackets of WPB, where men influence policy but do not make it, where the business men still remain, they think every possible restriction should be removed, consistent with war needs, and that civilian production should be encouraged as swiftly as possible. Most of the men in this group are convinced reconversion, complete and untrammelled, must develop immediately. They feel it is inevitable that at least 4,000,000 men and women now employed in war plants will lose their jobs between now and the middle or end of July. They forecast a reduction of man-hours to the extent of somewhere between 60 and 65 per cent. They hold that cutbacks inexorably will reach 50 per cent or more by September. They are convinced that civilian production, at the very best and with the utmost vigor in reconversion, cannot get even a moderate start for at least nine months, which means some time in the early months of 1946. They think that it will take most civilian plants a year, even two years, to get going. In the meantime they candidly look for turmoil, trouble, grief and unhappiness. But at the end of the period of reconversion, the inescapable delay in shifting back from war production, they anticipate a gigantic boom.

### **Some Chaos Foreseen**

The men from business in WPB, who realistically refuse to see a relatively painless shift from war to civilian life, whether it is by the military program or any other program, insist that it took at least two years to wind up the war production schedule, and it will take the same period of time to unwind it. They feel you simply cannot produce raw materials by wishful hopes and that you cannot process the raw materials, after they have been produced, by equipment you must wait to adjust or replace. They also point out that some materials that were free under the war program unquestionably must be placed under control during the reconversion period. They believe that there will be places and items which will need more workers than they can get when they need them.

In other words, they anticipate unbalance, some chaos, and they emphatically do not believe that business in these United States can function properly for a long time without controls and plenty of controls. You find here that many men in the places of influence in Industry Divisions of WPB are putting forth every ounce of influence for retention of controls. The same effort flows from many men in business who come here. Without the controls they fear we will have a period of industrial anarchy.

The general idea is that CMP will be "open ended,"

meaning metal fabricating businesses may be able to secure most of the metals on unrated orders which must be deferred to give the right of way to military and essential needs. Aluminum and copper are supposed to be more or less free late in May. Steel is said by some to be scarcer right now than ever before. It is generally assumed that when the reconversion program is clearer, there may be only two or three priority bands. Military will remain ahead of everything; the essential civilian will come next. Over-all civilian will either be the third priority group, or there may even be no third group. Straight civilian may be made simply a part of the second band. The idea is to eliminate L and M Orders and to handle the whole sequence by simple priorities. However, it is illuminating that it is still felt that there may be reasons for emergency and other preferences. These will be given some equivalent to an AAA by means of ratings or directives.

### **PR-25 Reinstated**

Spot authorization, PR-25, not long ago was regarded as the first definite technique to speed local, specific civilian activity as the cutbacks materialized. Lately it has not seemed to mean so much to the WPB people. No steel has yet been set aside for "spot" activities. Apparently no steel is to be allocated for the purpose. The thought now seems to be that the spot authorization may be unnecessary since we will have the essential civilian band rating. This would place the industrialist who might use spot authorization right next to the military priority band. Smaller War Plants Corporation insists smaller fabricators and producers should have guarantees of materials. The plan has not been determined or clarified, but it seems sure that industry in this bracket will be given a definite preference. And there will be relaxation that will permit construction under L-41, as well as general civilian construction. Some form of inventory control is apparently bound to remain for a long time.

The idea for the release of basic materials has not changed. Director Krug has always held that railroads come first. After materials are fed to those who produce for railroads—which materials are said to be already earmarked—the next release will be for the things needed by the oil industry. Next in line will be the public utilities, and then those who make containers. There is no unanimity about this schedule. Another important group in WPB has drafted a list of 100 civilian products that should have the right of way. It is not clear whether or not heating equipment is included in this list. It is regarded as improbable the list of 100 will be allowed preference before the Krug list. Apparently after the preferential allocations, soft goods and clothes will come next. Following in importance will be supplies to take care of the urgent demands for civilian maintenance, repair, and operating supplies. Thereafter materials presumably will be available to those who can induce the supplier to provide what they demand. In theory, the first to come will be the first to be served. Actually, undoubtedly, the fabricators' relations with their suppliers will have much to do with the answer.

### **Here's the Schedule**

Roughly, consistent with cutbacks and bottlenecks, it is now assumed the schedule will be something like this: after V-E Day it is expected production of radios may start from 3 to 5 months later; gas and electric

(Continued on page 141)



# Overhead—In 13 Easy Pictures

By Arthur Roberts

**M**ANY sheet metal contractors and warm air dealers have asked us if there is an easy way to an understanding of the various methods of overhead computation. Around this subject there is much fog because unfortunately there are numerous ways of figuring it for costing purposes, and members of this industry use different methods. This is confusing, particularly to those who are not familiar with figures or who have more flair for mechanical work than mathematics, a state of mind very prevalent in this field.

To get easy visualization of this intricate subject, we offer these simple exhibits, which illustrate the various methods of calculating overhead on estimates, the reasons for variances between estimated overhead and actual overhead, and the pitfalls to watch out for when computing overhead on estimates. These grades also show why estimated selling prices may vary period-to-period for the same contractor and why two contractors may get different selling prices even though they use the same percentages and have the same business costs. Bids often differ widely among contractors with the same business set-ups, much to the perplexity of members of this industry. The following tables tell why the easy eye-way.

There are six ways to figure burden for costing or pricing.

Say prior-period figures show that overhead expense has a ratio of 80% to cost of materials. An estimate may be figured this way:

**Exhibit A**

Materials .....	\$30
Labor .....	20
Prime cost .....	\$50
Overhead expense (80% of materials cost) .....	24
Over-all cost .....	\$74

This method would work out all right if every element that touches operation were fixed, but certain elements are not fixed, nor controllable.

Suppose materials cost decreases to \$20 during the period. Stick to this formula, and an estimate on the same job would give these figures:

**Exhibit B**

Materials .....	\$20
Labor .....	20
Prime cost .....	\$40
Overhead expense (80% of materials cost) .....	16
Over-all cost .....	\$56

You cut overhead 33⅓% because materials dropped

33⅓%, but overhead doesn't decrease with the cost of materials. If overhead is correct on Exhibit A, it should remain unchanged on Exhibit B inasmuch as the two estimates were made in the same period and based on the same experience figures taken from the last profit and loss statement prepared.

**Exhibit C**

Materials .....	\$20
Labor .....	20
Prime cost .....	\$40
Overhead expense (Exhibit A) .....	24
Over-all cost .....	\$64
Over-all cost (Exhibit B) .....	56
Estimate short-costed .....	\$ 8

If materials cost increases, these figures would appear on an estimate:

**Exhibit D**

Materials .....	\$40
Labor .....	20
Prime cost .....	\$60
Overhead expense (80% of materials cost) .....	32
Over-all cost .....	\$92
Over-all cost (Exhibit A) .....	74
Variance .....	\$18
Additional cost of materials .....	10
Estimate over-costed .....	\$ 8

You increase overhead 33⅓% because materials increased 33⅓%, but overhead does not increase with the cost of materials. If overhead is correct on Exhibit A, it should remain unchanged on Exhibit D.

**Exhibit E**

Materials .....	\$40
Labor .....	20
Prime cost .....	\$60
Overhead expense (Exhibit A) .....	24
Over-all cost .....	\$ 84
Over-all cost (Exhibit D) .....	92
Added to selling price .....	\$ 8

Exhibits ABCDE show that the calculation of overhead on cost of materials may cause unsuspected losses or gains and foster unstable pricing, an unwise business policy.

Labor cost is sometimes used to distribute burden to jobs. It is an unsafe base for the same reason:

#### Exhibit F

Materials	\$20
Labor	30
Prime cost	\$50
Overhead expense (70% of labor cost)	21
Over-all cost	\$71

Even though this ratio is based on experience figures, it is unsafe to use because labor cost does not rise or fall with overhead cost and inaccurate costing or pricing of service will result.

Prime cost (labor and materials) is sometimes used as the basis of computing overhead.

#### Exhibit G

Materials	\$20
Labor	30
Prime cost	\$50
Overhead expense (40% of prime cost)	20
Over-all cost	\$70

This is unwise costing for the same reason that costing overhead on the cost of labor or materials is unwise.

Overhead on jobs involving time may be computed by the labor hour method.

#### Exhibit H

Materials	\$30.00
Labor—(15 hrs. @ \$1.50 hr.)	22.50
Prime cost	\$52.50
Overhead expense (15 labor hrs. @ \$2.50 hr.)	47.50
Overall cost	\$90.00

On certain estimates, even though you use ratios accurately and prices of labor and materials do not change, you will short-cost or over-cost estimates unless you use the labor hour method as a test-check.

The labor hour method may go wrong, too. Say your experience figures show:

#### Exhibit J

Sales	\$1,000	100%
Cost of labor	\$150 (1)	
Cost of materials	450 (3)	
Total cost of sales	\$ 600	60%
Margin on sales	\$ 400	40%
Overhead expense (150 labor hrs. @ \$2 an hr.)	\$ 300	30%
Net profit	\$ 100	10%

Note that this shows a ratio of materials to labor sold of 3 to 1.

If, during the next period of 150 hours you reduce the materials-to-labor ratio to 2 to 1, this will be the result:

#### Exhibit K

Sales	\$ 750	100%
Cost of labor	\$150 (1)	
Cost of materials	300 (2)	
Total cost of sales	\$450	60%
Margin on sales	\$300	40%
Overhead expense (Same as on Exhibit J)	\$300	40%
Net profit	00	00%

Try to maintain a profitable ratio between labor and materials. Your experience figures will disclose this ratio.

A shop fabricating metal parts for subsequent assembly outside, as is common practice on sub-contract work, may find the machine-hour method a satisfactory way to distribute burden to output. Say a machine was used 200 hours in a prior period and the overhead chargeable to it was \$1,000, then the machine-hour rate is \$5. The overhead is applied to operation on the basis of the hours a machine is used instead of the labor hours.

Say a machine operates 40 hours in a subsequent period. Output would be costed this way:

#### Exhibit M

Labor	\$200
Materials	80
Overhead—40 machine hours at \$5	200
Over-all cost	\$480

If 200 units were turned out, the over-all cost per unit is \$2.40, the overhead cost per unit \$1.

The overhead and net profit may be combined in the margin on sales computation, but this should be checked against the labor-hour method to eliminate any possibility of loss-pricing. Say a prior period shows these figures:

#### Exhibit P

Sales	\$1,000	100%
Labor and materials	\$ 600	60%
Margin on sales	\$ 400	40%
Overhead expense	\$ 300	30%
Net profit on sales	\$ 100	10%

This contractor figures \$120 for labor and materials on a job, which, in accordance with prior-period figures, is 60 per cent of sales, so divide 60 into \$120 to get 1 per cent of sales, then multiply by 100 to get sales at 100 per cent, or 100 times \$2, which gives \$200 as the selling price. The contractor would then figure his estimate this way:

#### Exhibit R

Selling price	\$200	100%
Labor and materials	120	60%
Margin on sales	\$ 80	40%
Overhead expense	60	30%
Net profit on sales	\$ 20	10%

(Continued on page 134)

# Interpretations, Amendments, Easements To Existing Orders

## L-22 Revoked

**E**FFECTIVE May 5, Limitation Order L-22 has been revoked as follows:

### WAR PRODUCTION BOARD

#### Part 3288—PLUMBING AND HEATING EQUIPMENT—FURNACES.

Section 3288.81, Limitation Order L-22, establishing simplified practices for the production of furnaces is hereby revoked.

This revocation does not affect any liabilities incurred under the order. The production of furnaces remains subject to all other applicable regulations and orders of the War Production Board.

Issued this 5th day of May, 1945.

### WAR PRODUCTION BOARD,

By J. Joseph Whelan, Recording Secretary.

This revocation of L-22 means manufacturers may produce as many model furnaces as they wish and that there are no restrictions with reference to furnishing round or square casings. The door is wide open to manufacture coal, gas and oil-fired furnaces. However, the controlled materials plan is still operative.

There are strong indications right now that more raw materials will be made available for the third quarter. It would appear, therefore, that the only limitation on furnace production will be the manpower situation, which will be variable according to the various areas.

## Manufactured Gas Released

**T**HE Office of War Utilities of the War Production Board announced April 30 the revocation of General Conservation Order L-174, which limited new loads on manufactured-gas utilities systems and established machinery for emergency curtailment of service during periods of shortages.

The order was originally issued September 30, 1942, and was last amended December 22, 1943. It prohibited deliveries of manufactured gas to new installations of residential space heating equipment except under specified conditions and limited new industrial loads on manufactured-gas systems in addition to providing the curtailment procedures.

Many manufactured-gas utilities were given individual exemptions from the order during its life, under a provision permitting OWU to exempt systems whose facilities were found to be adequate to meet all demands for service.

## Release of Key Men

**E**MPLOYERS may obtain release of their key men from military service under a procedure set up by the War Department, *unless* the servicemen (1) are receiving basic training or awaiting assignment to a permanent organization, (2) are serving overseas or scheduled to go overseas in the near future, or (3)

their release would affect seriously the efficiency of their unit.

Each request for release must be filed with the War Department, Industrial Personnel Division, ASF, Washington, D. C., with this information: (1) the job to be performed by the recalled soldier; (2) his prior experience; (3) steps taken to obtain replacement; (4) priority rating of contracts under which the serviceman will work; and (5) the wages or salary to be paid for the job. The employer also must indicate whether the soldier to be recalled is related to the signer of the application or any member of the company.

This procedure applies to enlisted army men. An army officer may apply direct to the War Department with facts supported by a letter from his prospective employer.

## Freon Released

**A**LL controls on the production and distribution of "Freon-12" and "Freon-22," the refrigerants used in air conditioning and refrigerating systems, were removed April 28 as the WPB ordered revocation of Conservation Orders M-28 and M-28a.

WPB officials warned dealers, distributors and owners of air conditioning and refrigerating systems that they should do everything in their power to assure the prompt return of empty cylinders. If such containers are not returned speedily, WPB said, there is a possibility that a shortage may develop that will seriously affect shipments.

## Plumbing Orders Revoked

**T**HREE schedules of the plumbing and heating simplification order, L-42, covering low-pressure heating boilers (Schedule III), cast iron radiators (Schedule VI), and radiator supply valves, thermostatic, float and boiler return traps (Schedule VIII) have been revoked by the WPB.

WPB orders still in effect continue to restrict the use of certain materials entering into the production of equipment covered by these three schedules, WPB pointed out.

Three limitation orders affecting valves and pipe fittings have also been revoked, effective April 28. They are:

L-252, which established specifications of size and material for production of valves and valve parts, subject to specific use exceptions.

L-278, which limited the manufacture of steel pipe fittings to specified types, sizes and specifications.

L-288, which restricted the manufacture, sale and delivery of gray cast iron, malleable iron and brass and bronze pipe fittings to specified types, sizes and specifications.

In all cases, WPB said, the parts affected by the respective orders remain subject to all other applicable regulations and orders of WPB.



# On Our Industry's Front

## Smoke Pipe Short

AN ESTIMATED 100,000 tons of stove and furnace smoke pipe will be needed in 1945 to meet minimum essential requirements, the task committee of the Stove and Furnace Smoke Pipe Industry Advisory Committee reported to WPB on April 20. (See AA, April Washington Report.)

The committee recommended allotment of a total of 60,000 tons of carbon steel for the second half of 1945, and said that if any additional steel is available, the industry will be able to use up to 50,000 tons of steel per quarter with little if any increase in manpower.

The task committee also reported:

Jobbers' inventories are now less than one-third of normal for this time of year. An average of 119 per cent of 1944 shipments will be needed by jobbers in 1945 to take care of minimum requirements.

As a result of delay in receiving first quarter, 1945, allotments of steel and use of advance inventory, production of pipe can be maintained at only 25,000 tons of pipe in the second quarter.

Requirements indicate the need for 35,000 tons of steel in the third quarter to maintain production and replace inventory depleted by second quarter withdrawals, and of 25,000 tons of steel in the fourth quarter. First quarter allotments were 25,000 tons and second quarter allotments were 12,000 tons.

A survey of end use of stove and furnace smoke pipe shows 87 per cent for replacement, 9 per cent for new construction, 2 per cent for chick brooders, one-half of 1 per cent for tobacco curing, and 1½ per cent for all other uses.

WPB officials said that third quarter allotments of steel are expected to be at least as large as those for the first quarter. The effect of second quarter cut-backs are now beginning to be felt by steel mills, which should be caught up by the end of the quarter, they said. No appreciable carry-over into the third quarter is expected.

To satisfy the tremendous backlog of demand for pipe, production of 50,000 tons per quarter for "some time" would be required, committee members said.

Committee members reported that they can get long terne plates suitable for furnace smoke pipe, but that its use is prohibited by Order M-43 (Tin). Government officials suggested that appeals be filed.

## Post War Construction

POSTWAR construction volume is described in statistics on postwar projects released by F. W. Dodge Corporation. Up to March 31, 90,700 specific projects contemplated for postwar execution had been reported by the corporation's field staff, the estimated total cost of the projects being \$14,813,613,000. These projects were reported for the territory east of the Rocky Mountains, and consequently do not fully measure the potential postwar volume for the whole country.

Of more immediate significance is the fact that 30,217 of these projects, amounting to \$7,231,295,000, have progressed to the design stage, representing

more nearly the volume of work likely to be ready for bids within a reasonable time after wartime restrictions are lifted. This volume of postwar planned work is measurably greater than the total volume of contracted work in the 37 eastern states for any previous peacetime year.

Commenting on these figures, Thomas S. Holden, president of F. W. Dodge Corporation, said: "Any delays in postwar construction revival will definitely be due to temporary material and manpower shortages rather than to any lack of demand or to dearth of planned projects. Our recorded figures include no deferred repair, maintenance and modernization projects, demand for which will be very heavy. They include only moderate amounts of such small new private building projects as are not usually planned much in advance of actual work. While our tabulation is definitely overweighted with public projects which may take some time for adequate financing, the \$2,379,518,000 of new private projects in the design stage is considerably greater than the actual volume of private work in the 37 states contracted for in any of the prewar years, 1937, 1938 or 1939."

## Register Situation

AT THE Warm Air Register and Grille Industry Advisory Committee meeting March 27, members stated that mill deliveries were about 30 days behind schedule and they expected all first quarter material to be delivered by the end of April.

Members agreed that the full impact of this reduction will effect a hardship during the third quarter (AA, April, 1945). They stated that they are still working on 1944 orders and that even if their second quarter allotments had remained at first quarter level, it would be late in the second quarter before they could clean up this backlog of 1944 orders. Members advised that they are receiving a number of orders for registers and grilles to be used on approved war housing projects which they will not be able to accept because of lack of material. However, with this second quarter reduction, and inasmuch as the industry has no inventory of this product, members felt that, although they will probably be able to fill their AA-1 orders in the second quarter, they would be unable to meet the demand for war housing projects in this quarter and probably for the rest of the year.

Members stated that once they cancel their third quarter advance allotments it will be almost impossible to get back on mill schedule. Members agreed that some material could be obtained from warehouses if allotments for the Third Quarter are increased. They stated that light gauge sheets were becoming increasingly difficult to obtain from warehouses. They also advised that if they have additional allotments they might be able to pick up mill over-runs.

Manufacturers reported orders from floor furnace manufacturers for faces for these floor and wall furnaces. The suggestion was made that if register and grille manufacturers are unable to fill these orders because of lack of material, the floor furnace manufacturer could extend a part of his allotment to the register and grille manufacturer for this production.

Members estimated that approximately 75 to 80

per cent of the industry is on direct war work. They also advised that about 40 per cent of their production of registers and grilles goes to the Army, Navy and Maritime Commission, and 50 per cent to War Housing. They explained that they must have material for the production of registers and grilles to keep their men busy during interruptions in their war work. They stated that hardship will exist as it will be necessary to retain labor at considerable expense during intervals while they are waiting for steel to come in for their war work, or when breakdowns or retooling stops production on war work or dismiss labor, and if this occurs they would be unable to meet their war contract schedules. Most of the members who have a high percentage of war work stated that they themselves would not be hurt by this second quarter reduction, but their war work would suffer if they do not have sufficient material to keep their men busy on register and grille production during these lags in war work.

### Labor to Be Consulted

**P**LANs for intensive consultation with labor on all aspects of reconversion problems that will arise during Period I—the period between the defeat of Germany and the defeat of Japan—are announced by the WPB.

During the 60-day period beginning May 7, some 300 representatives of labor in all fields of American industry will be called to Washington for a series of meetings on reconversion problems. They will include representatives of unions in manufacturing operations in all parts of the nation.

These meetings are expected to develop recommendations for equitable distribution of the burden of cutbacks in the affected industries.

A series of meetings with labor representatives from the consumer durable goods field will include committees from the domestic laundry equipment, machine tools, aluminum, construction machinery, general industrial equipment, plumbing and heating, building materials, lead and zinc mining and smelting, fractional horsepower motors and lumber and lumber products.

### Fuel Oil Scarce

**T**HERE will be no more kerosene or heating oil available for civilian consumption next winter than there was during the heating season now about to expire, says PAW.

Kerosene and heating oil, it was explained, are what the petroleum industry calls distillate oils. Among these distillate oils is also "702" diesel oil, which is the lifeblood of amphibious warfare, since it fuels landing craft, tanks, tractors, half-tracks, bulldozers—in a word, most of a wide variety of machines created for modern warfare. This type of oil is used also by submarines. The demand for this product has increased continuously with the expansion of the war. "Navy special" oil for the larger vessels of the fleet makes another large drain on distillate oil, and its use is expected to increase with the mounting vehemence of the drive on Japan.

PAW says: "It should be recognized clearly that the program the petroleum industry has been called upon to follow does not leave room for lifting of restrictions on home-heating oil and kerosene consump-

tion by civilians and will not permit any increase in the number of installations using this type of fuel by conversion from existing coal or other heating plants."

### Small Plants Survey

**T**HE Smaller War Plants Corporation has begun a mail survey of 42,000 small plants in the metal-working industry to assist them in obtaining war contracts and later in reconvert to civilian production.

Mail inquiries (Form SWPC-116) have been sent to the plants by the Census Bureau, which is co-operating with SWPC in the program. The plants are asked to give data on unfilled orders, shipments distributed by claimant agencies, employment, payrolls, kinds of materials used in production, and principal operations or departments.

The SWPC survey is concurrent with a War Production Board quarterly survey (Form WPB-732) of operations of similar large plants.

### War Housing Disposal

**M**ETHODS of disposing of government-owned war housing that becomes surplus to war needs are announced by Federal Public Housing Authority. The disposition plans, based on policies adopted by the National Housing Agency, will affect the bulk of more than 200,000 publicly financed *permanent* family dwellings, including demountables, which will become surplus either during or after the war. They also cover the disposal of most of the temporary housing declared surplus during the war.

In accordance with the Lanham Act, *permanent* war housing that is *not* demountable and that becomes surplus to war needs will be sold for private residential purposes unless transferred for use by other Federal agencies or other uses specifically authorized by Congress. Projects may be considered for use as low-rent housing where local communities, through their governing bodies and the local housing authorities, request it. The Lanham Act provides that such housing may not be used for low-rent projects except with specific approval of Congress. In cases of such local requests, other disposition plans will be deferred to give Congress an opportunity to consider the requests.

In the disposal of such dwellings to purchasers, consumers—present or prospective occupants—are to be given preference. The following order of preference has been set up: present occupants, war veterans desiring homes for their own use, other prospective occupants, private investors.

During the war *demountable* housing that becomes surplus to government war housing programs will be sold to private individuals or corporations to meet their private war housing priority quotas in other localities. This will be done to reduce the demand for materials and labor so much as is possible in the provision of additional privately built housing during the war. After the war, however, demountable will be treated as permanent housing and sold under the provisions given above for disposing of permanent structures, except that if not needed in their locations they may be sold for removal and re-erection elsewhere.

Only a part of the *permanent* dwellings are suitable for individual ownership. These are in projects consisting predominantly of single family houses, twin

(Continued on page 128)



# NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION



*Says*

## Here Are the Manufacturers Who Have Subscribed to the Advertising Program

AS of the middle of April, almost one-half of the recommended \$200,000 budgeted for the proposed national advertising and dealer training program of the National Warm Air Heating and Air Conditioning Association has been subscribed by manufacturers, jobbers and dealers. With such progress there is every indication of complete success, financially, by the time the campaign is ready to go.

Listed below, by products, are the manufacturers who have subscribed. Many other manufacturers have agreed to subscribe, but as yet have not mailed their subscription or have not been tabulated.

As soon as possible, lists will be published showing the jobbers who have subscribed and lists of dealers who have joined the Dealers Division, and by joining have automatically subscribed a "to-be-determined" percentage of their dues to the advertising campaign.

Here are the manufacturers who have subscribed:

### Furnaces

American Furnace Co., St. Louis, Mo.  
Cleveland Steel Products Corp., Cleveland, Ohio.  
Conco Corporation, Mendota, Ill.  
Farquhar Furnace Co., Wilmington, Ohio.  
Forest City Foundries Co., Cleveland.  
Front Rank Furnace Co., Div. Liberty Foundry Co., St. Louis, Mo.  
Grossenbacher Furnace Co., St. Louis, Mo.  
Hall-Neal Furnace Co., Indianapolis, Ind.  
Heil Co., Milwaukee, Wis.  
Henry Furnace Co., Medina, Ohio.  
Home Furnace Co., Holland, Mich.  
Homer Furnace & Foundry Corporation, Coldwater, Mich.  
International Heater Co., Utica, N. Y.  
Keith Furnace Co., Des Moines, Iowa.  
Lennox Furnace Co., Marshalltown, Iowa.  
Majestic Co., Huntington, Ind.  
Mayflower Air Conditioners, Inc., St. Paul, Minn.  
Meyer Furnace Co., Peoria, Ill.  
Morrison Steel Products, Inc., Buffalo, N. Y.  
Mueller Furnace Co., L. J., Milwaukee, Wis.  
Olsen Manufacturing Co., The C. A., Elyria, Ohio.  
Peerless Foundry Co., Indianapolis, Ind.  
Perfection Stove Co., Cleveland, Ohio.  
Premier Furnace Co., Dowagiac, Mich.  
Rybolt Heater Co., Ashland, Ohio.  
St. Clair Foundry Corp., Centralia, Ill.  
Stainless & Steel Products Co., St. Paul, Minn.  
Stewart Co., W. H., Oklahoma City, Okla.  
Syncromatic Corporation, Milwaukee, Wis.  
Thatcher Furnace Co., Garwood, N. J.

Union Manufacturing Co., Inc., Boyertown, Pa.  
Viking Mfg. Corp., Dayton, Ohio.  
Waterman-Waterbury Co., Minneapolis, Minn.  
Williams Oil-O-Matic Heating Corp., Bloomington, Ill.  
Williamson Heater Co., Cincinnati, Ohio.  
Wise Furnace Co., Akron, Ohio.  
York-Heat Div., York-Shipley, Inc., York, Pa.

### Pipe and Fittings

Chicago Furnace Supply Co., Chicago, Ill.  
Cincinnati Sheet Metal & Roofing Co., Cincinnati, Ohio.  
Lamneck Products, Inc., Middletown, Ohio.  
Meyer & Bro. Co., F., Peoria, Ill.  
Reeves Steel & Mfg. Co., Dover, Ohio.

### Registers

Auer Register Co., Cleveland, Ohio.  
Best Register Co., Milwaukee, Wis.  
Hart & Cooley Mfg. Co., Holland, Mich.  
Independent Register Co., Cleveland, Ohio.  
Tuttle & Bailey, Inc., New Britain, Conn.  
United States Register Co., Battle Creek, Mich.

### Blowers

Air Controls, Inc., Cleveland, Ohio.  
Brundage Co., Kalamazoo, Mich.  
Lau Blower Co., Dayton, Ohio.  
Morrison Products, Inc., Cleveland, Ohio.  
U. S. Air Conditioning Corp., Minneapolis, Minn.  
Viking Air Conditioning Corp., Cleveland, Ohio.

### Control Equipment

Perfex Corporation, Milwaukee, Wis.  
Sampsel Time Control, Inc., Spring Valley, Ill.  
White Manufacturing Co., St. Paul, Minn.

### Humidifiers

Automatic Humidifier Co., Cedar Falls, Iowa.  
McDonnell & Miller, Chicago, Ill.  
Maid-O'-Mist, Inc., Chicago, Ill.  
Skuttle Mfg. Co., Detroit, Mich.

### Bearings

Randall Graphite Products Corp., Chicago, Ill.

### Filters

Badger Corporation, Milwaukee, Wis.  
Owens-Corning Fiberglas Corp., Toledo, Ohio.  
Research Products Corporation, Madison, Wis.



## George Harms 1860-1945

Death has taken George Harms. But just as in life he was a constant inspiration to all the thousands of men in this industry who knew and worked with him through more than half a century, so, in the years to come, his charity, integrity, and untiring efforts to elevate this business will carry on as an inspiration for a better industry.

His attributes were many. His word was his bond. His charity was boundless. His friendliness knew no limitations. But of all these fine qualities, perhaps the one which endeared him most to members of this industry was his willingness to shoulder any responsibility or to take on any work—he only asked that it contribute to the elevation of our industry.

He took great pride in the fact that of countless conventions of the old national association and most of the state conventions as well, there were few meetings he did not attend. And attendance with George Harms was more than having a good time. He always had something concrete to suggest; he drew on his long association with men and organizations to advise, suggest, and guide the thoughts and steps of newer men in the industry.

His greatest contribution was as Chairman of the Trade Development Committee of the old National Sheet Metal Contractors Association. Out of this committee's work came Standard Practice in Sheet Metal Work, by all odds the greatest contribution to better design and practice ever produced by any organization or any craft in the construction field.

One of his close associates gives us this picture of an indomitable spirit. When he was well past fifty he broke his wrist cranking his car. That didn't stop

him more than a few weeks. As he was walking around the ruins of the disastrous fire which all but wiped out his manufacturing plant, he fell and broke his hip. He was about 70 then. Where others, at his age, might have stopped active work, George Harms, convalescing, thought it a good joke on his family to crawl upstairs, one step at a time, from his bed downstairs. Soon he was back at his desk.

Hundreds of men in this industry will remember the shock caused by the passing of Mrs. Harms after more than 50 years of marriage. But George Harms did not go to pieces; he found activities which kept him from suffering with grief. And, finally, blindness overtook George Harms. He did not complain, he did not give up—though he was well past 80. Vividly, indeed, do the officers and directors of the present Sheet Metal Contractors National Association remember the interest, stimulation and sprightliness of George Harms' suggestions and comments at the initial meetings when the national association was being revived two years ago—although George Harms couldn't see.

Despite doctor's orders George Harms wrote scores of personal letters urging friends to actively support the new national association and it was only under positive orders that he desisted from actively taking to the road to help organization.

As the national association resolved: "The Almighty has seen fit to take our staunch friend and benefactor George Harms. His departure has created a great loss and left a void impossible to fill."

We wish that the industry and the association will be fitting monuments to our lost friend.

---

## *Schools on the New Code and Manual*

SCHOOLS to acquaint heating contractors with the new Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems (Section 7 of Practical Warm Air Heating) and the new Gravity Code and Manual are being held and planned in encouraging numbers.

A one-day school with a dinner and evening session was held in Toledo Ohio. More than 60 men engaged in heating attended. The new Manual was used as the text.

Fox Valley Association, in Illinois, held a one-day school on April 28 with G. A. Voorhees as instructor. A full report will appear in the June issue.

The Saturday schools (on four Saturdays) staged by the Detroit Association of Warm Air Heating and Air Conditioning Contractors began on March third and continued throughout the month. Fred Bishop, Ed Root, Bob Champlain were the instructors and the new Manual is the text.

The one-day school recently held in Columbus by Vorys Brothers will be followed shortly by two more schools—one in Springfield and the other in Zanesville.

Indiana is planning two or more schools, but has temporarily postponed them because of the argument with FHA. FHA accepts the Standard Code, but re-

fuses to accept the Gravity Application Manual so contractors are forced to design gravity jobs in Indianapolis by the Standard Code and work in inches of leader pipe while our industry is endorsing the Application Manual which works in BTU's. Further, FHA refuses to accept the Application Manual's and our forced air Manual's method of figuring heat loss through a cold ceiling—we now say the loss can be figured as a unit (ceiling, attic space and roof); FHA says we must figure the attic temperature same as outdoor air—insulation or no insulation.

### **Mansfield, Ohio**

Not mentioned previously in AA's review of schools is the school held in Mansfield, Ohio, for dealers in that immediate area. The instructor was Clarence Grandstaff of C. A. Olsen Manufacturing Co., Elyria. Mr. Grandstaff reports on the school:

"The engineering school at Mansfield, Ohio, conducted for the Mansfield dealer association had an attendance averaging about 25 men each day and, in spite of the icy highways, they came in for all three sessions.

"The school was for the instruction of both gravity and winter air conditioning systems, but the greatest number  
(Continued on page 133)

AMERICAN ARTISAN

# RESIDENTIAL AIR CONDITIONING

S E C T I O N



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

# Waterbury

Get In Touch With

For A Reliable Post-war Connection

We say to you in all earnestness—  
"Get In Touch With Waterbury For  
A Reliable Post-War Connection."

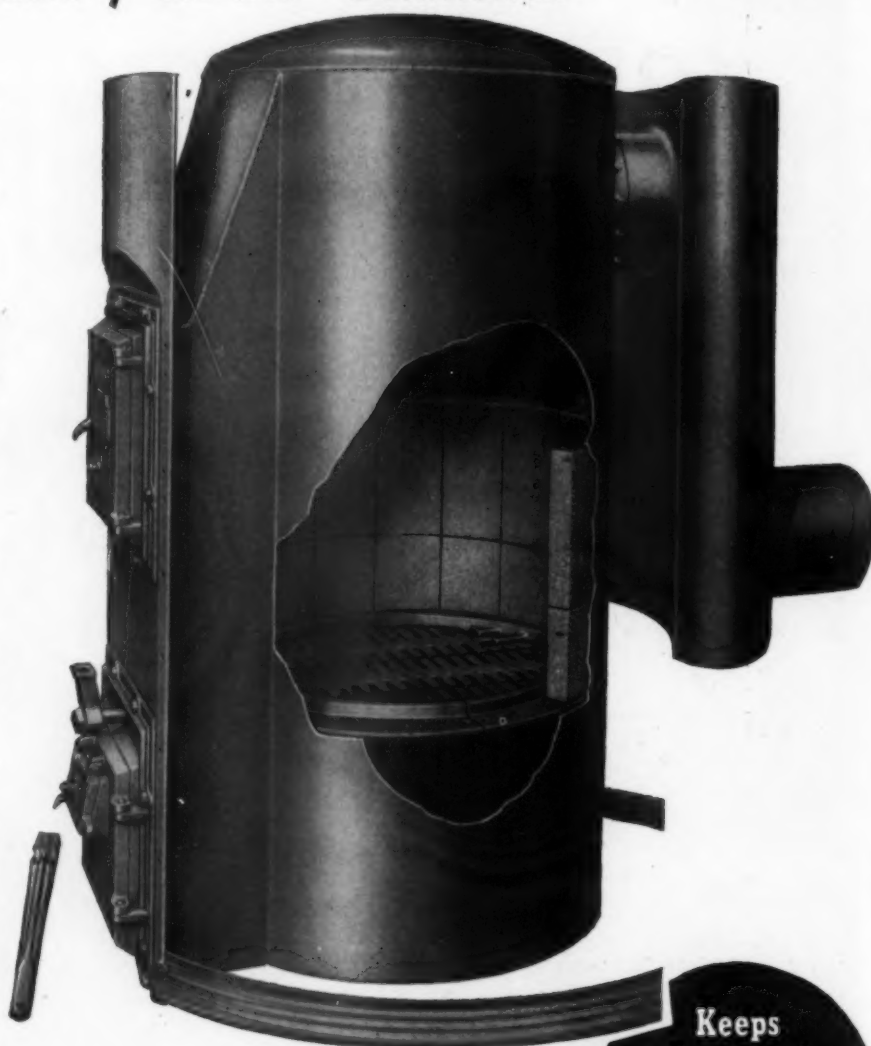
We believe there are important  
reasons why you should so safe-  
guard your future supply:

1. The immediate post-war de-  
mand will be so great that  
we shall have to apportion  
at least our early 1946 pro-  
duction among established  
customers almost as rigidly  
as we do now.
2. There will be no accumulated  
stocks to draw upon.

We regret that we cannot ac-  
cept any more orders from  
new accounts for 1945 ship-  
ment.

We are doing our best to take care  
of our established trade — but the  
war comes first — and until that  
job is done, our best will have to  
be good enough. In any event,  
every Waterbury Furnace that is  
shipped will be of a quality that  
creates good will and future sales.

So, we urge that the prudent thing  
for distributors and retailers is to  
"Get In Touch With Waterbury."  
— plan now for a reliable source  
of supply in 1946.



THE GASTITE FURNACE  
MODERATE IN PRICE  
HIGH IN QUALITY

Keeps  
Gases and  
Dust Out of the  
Heat  
Stream

**THE WATERMAN-WATERBURY COMPANY**

1122 Jackson St. N. E., Minneapolis, Minn.

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# The "How, What and Why" of the New Winter Air Conditioning Manual

BY  
**S. KONZO\***

HOW TO USE IT  
WHAT RESEARCH BACKS IT UP  
WHY EVERYBODY SHOULD ADOPT IT

## Blower Selection and Blower Ratings

**T**HE blower of the furnace in a warm-air, winter air conditioning system cannot be considered as two independent units, entirely unrelated to each other in their performance. The capacity of the blower directly affects the capacity and operation of the furnace. If a small volume of air is passed over the furnace, the air will be heated to a higher temperature than when a large volume of air is passed over the furnace. This is true, of course, only when the heat input to the furnace is the same in the two cases. Now, there is no hard and fast rule that says that a 100 deg. F. temperature rise is more or less desirable than say a 90 deg. temperature rise, or 70 deg., or 110 deg. F. As a result, during the past ten years a number of arguments have been advanced in favor of one temperature rise or another.

Let us examine a little more closely this matter of temperature rise and air volume. Let us set down the facts as follows:

*Arguments in favor of a small temperature rise (say 50 to 70 deg. F.) and LARGE air volume.*

1. Smaller temperature rises result in higher heat transmission efficiencies.
2. Smaller temperature rises mean lower register temperatures and therefore lower ceiling temperatures.
3. In case the pressure losses in a duct system have been underestimated, it will be possible to stand some reduction in air volume delivered by the blower without any difficulties in balancing the system.

*Arguments in favor of a large temperature rise (say 120 to 135 deg. F.) and SMALL air volume.*

1. Smaller air volumes mean smaller blower can be used.
2. Smaller ducts can be used.
3. Less air motion in room means less concern about drafts and register locations.
4. With a given setting of the blower switch, the blower will operate for longer periods than when a larger air volume was circulated.

Those who are in favor of a small temperature rise usually state that the number of air recirculations per hour should be greater than, say, 5 or 6. There are some serious limitations to this "rule of thumb" method of selecting blower capacities.

1. If we make any arbitrary rule that the air recirculations should be, say, 5 changes per hour, it would mean that a house having 12,000 cu. ft. of space

would require  $5 \times 12,000$  or 60,000 cu. ft. per hour, or 1,000 cu. ft. per minute. If this given house was not weather-proofed with insulation and storm windows the heat loss might be, say, 110,000 B.t.u. per hour. Now, if we take another house that is well insulated but still having only 110,000 B.t.u. per house loss, the volume of the house might be as large as 20,000 cu. ft. By the 5 air recirculation rule, this insulated house would require  $5 \times 20,000 \div 60$  or 1,670 cu. ft. per minute. In other words, here are two houses having the same heat loss, but in the uninsulated house you would have to use about a 10 in. blower and in the insulated house about a 14 in. blower. To follow this case to its ultimate conclusion, it would mean that every furnace in a combination furnace-blower unit would require two, three or more blower sizes, each of which would have to be tested together with the furnace.

2. In any case, whatever the number of air recirculations per hour you might select, this number would only be an average for the entire house. Those rooms, such as sunrooms, which have a small volume but a large heat loss, may easily have air recirculations twice the average value. Now air recirculations of 10 or 12 per hour will result in excessive air motion in the room with one or two register openings. Air can be introduced at these high rates if the air were introduced through a perforated ceiling over the entire ceiling, but such methods of air distribution are not commonly used in ordinary residential installations.

3. The arbitrary rule that 5 or 6 air changes would have to be maintained would mean that any attempts to standardize on duct design would be out of the question. Each job would require a complicated estimate of design bonnet temperature and individual register temperatures, and a laborious process of selecting air volumes and duct size.

### **Air Changes Not Important**

Our tests in the Research Residence do not indicate that 6 air recirculations per hour gives any more desirable results than 3 recirculations per hour. These tests did indicate that it was desirable to provide practically continuous air delivery for any weather colder than about 40 deg. F. We have found it more desirable to have a smaller quantity of air circulated continuously than a larger quantity circulated intermittently. We believe that the main reason why some designers have insisted upon 6 air changes per hour is that they have greatly underestimated the pressure losses in the duct system, and in order to compensate

\*Special Research Professor, Engineering Experiment Station, University of Illinois.

for this error they have insisted upon a fictitious air volume that they would not obtain in the actual installation. We do not believe that proper design should consist of this subterfuge. We believe strongly that pressure losses should be properly considered, and that the corresponding calculated air volumes should be close to reality. This is the whole concept behind the new Manual method. Hence, we have disregarded "air changes" as a criterion. It can be used as an approximate check of the cfm. values if one so desires, but it should not have any further use in actual design.

The discussion in the previous issue indicated that in the furnace test codes the trend is toward the use of a temperature rise between 90 deg. and 100 deg. F. and that blower sizes have been determined by the furnace manufacturer to fit each furnace. This trend toward a standardized approach means that the heating contractor has less to worry about and little to say as to what sized blower should go together with a given sized furnace. It is difficult to foresee the day when central heating plants will be sold as "over-the-counter" merchandise, but the fact that the heating contractor is furnished only certain definite combinations of furnaces and blowers is a long step in that direction.

The industry still has a long way to go. At the time of writing, the only furnace-blower combinations that strictly meet stated requirements and which are tested and rated by a recognized central laboratory are gas-fired units bearing the seal of approval of the American Gas Association. Fortunately for industry, both oil-fired and solid-fuel-fired furnaces will eventually be rated by somewhat similar methods, as was explained in the preceding article. The heating contractors must realize that furnace-blower ratings that are made from actual tests throw a considerable burden

and expense on the furnace manufacturer. Such tests are difficult to make, but the fact that the furnace industry is emphasizing performance, instead of so many pounds of steel or cast iron, is an extremely healthy sign of growth.

### Furnace-Blower Combination Units

When the furnace and blower are assembled by the furnace manufacturer in an integral casing, he should be furnishing you more than a furnace and blower. That combination unit should be an engineered job, in which part or all of the following items have been properly considered:

1) The rated capacity of the furnace will be tied in with the rise in temperature of the air passing over the furnace, usually not exceeding 100 deg. F.

2) The volume of air required to maintain this temperature rise will be delivered by the blower against a known pressure.

3) The blower will be capable of overcoming the resistances to air flow imposed by the furnace, filters, and baffles inside of the casing, and will still have sufficient pressure available to overcome resistances of the external duct system. The available pressure is usually 0.20 inch.

4) The air flow will be sufficient and properly directed so that no part of the furnace will have "hot spots"; namely, excessive metal temperatures. Proper design will permit the use of lighter gauge metal in the furnace.

5) The furnace will be so encased and baffled that the outcoming air will be well mixed and uniformly distributed. In other words, the cool air will not "by-pass" the heating surface, nor will the air be directed entirely to one side of the casing.

6) The air from the blower will be sufficient in volume and will be properly directed over the heating surfaces of the furnace so that reasonably high efficiencies will be obtained.

7) Proper correlation of blower and furnace will result in effective heat transfer, so that a smaller furnace will be as effective as a larger furnace not properly correlated with its blower.

8) The blower will be properly placed in relation to the furnace so that vibrations are not transmitted to the casing.

9) The blower will be sized so that it does not have to be run at excessive speeds that result in noisy or power-consuming operation.

It should be understood that when performance tests are conducted on a furnace-blower combination unit, the capacities that are stated in the furnace rating are not the maximum that can be obtained by the unit. The catalog ratings, based on accepted methods of testing, represent reasonable performances that will insure long life of equipment, reasonable efficiencies, and assurance of predicted results.

In simplest terms, therefore, when a heating contractor determines the Btu. heat loss from a house, he has the data which enables him to select a combination unit, in which the furnace and the blower are matched units.

### Temp. Rise and Blower Switch Settings

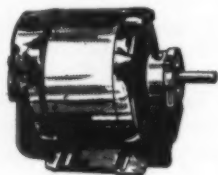
The fact that a combination furnace-blower unit is rated under test conditions for 100 deg. temperature rise from inlet to bonnet, or that the duct system is designed for a bonnet air temperature of 165 deg. F., does NOT imply that the setting of the blower switch should also be at 165 deg. F. The relationship between blower operation and the setting of the blower

A—Excellent



1. Large centrifugal blower operated at slow speed.
2. Self-aligning bearings.
3. Resilient mountings.
4. Flexible connection at blower outlet.
5. Summer switch for independent operation of blower.
6. No radio interference. Blower to be grounded.

201. Motor for Blower



A "cheap," short-lived, noisy motor which causes radio interference and the lights to "flicker" has no place in the heating system.

A—Excellent

1. Motor shall be of "long-hour duty" type — this type is also referred to as "Time Rating — Continuous."
2. Thermal overload protection.
3. Resilient mounting.
4. Low starting current.
5. No radio interference. Motor to be grounded.

Fig. 6—"Yardstick" classification for blowers and motors.



Table 5

## SUGGESTED MINIMUM BLOWER SIZE FOR SEPARATE BLOWER INSTALLATIONS

The following table applies only to installations in which the blower is selected separately from the furnace. This table does not necessarily apply to packaged units in which the blower is integrally assembled with the furnace.

Total B. t. u. Heat Loss in B. t. u. per hour	Minimum Blower Wheel Diameter*	Minimum Motor Size**	Required Air Delivery, C. f. m.	Select Speed to Secure Static*** Pressure of:
1	2	3	4	5
Up to 40,000	9 in.	1/6 h. p.	520 c. f. m.	3/4 in. s. p.
40,000 to 60,000	9 in.	1/6 h. p.	700 c. f. m.	3/4 in. s. p.
60,000 to 80,000	10 in.	1/6 h. p.	950 c. f. m.	3/4 in. s. p.
80,000 to 120,000	12 in.	1/4 h. p.	1400 c. f. m.	3/4 in. s. p.
120,000 to 150,000	14 in.	1/3 h. p.	1770 c. f. m.	3/4 in. s. p.

\* Based on multi-blade, forward-curved blade, double width, double inlet type, or equivalent.

\*\* A long-hour duty type of motor is required.

\*\*\* Blower speeds should be adjustable approximately 10 per cent faster and 10 per cent slower than the speed required to maintain the listed static pressures.

For intermittently heated structures, such as churches, which may be heated only one or two days out of the week, see Note 13 in the first part of Section A of this Manual.

switch will be discussed in more detail in a later article. It is sufficient at this point to quote a few specific recommendations from Section H in the Manual, as follows:

### Section H

#### BRIEF NOTES ON INSTALLATION AND OPERATION

SUCCESSFUL OPERATION OF THE HEATING SYSTEM REQUIRES CAREFUL ATTENTION TO:

- RELATIVELY LOW SPEED OPERATION OF THE BLOWER,
- LOW SETTING OF THE CUT-IN TEMPERATURE OF THE BLOWER SWITCH,
- ADJUSTMENT OF DEFLECTING VANES IN WARM AIR REGISTERS.

THE BLOWER OPERATION SHOULD BE PRACTICALLY CONTINUOUS IN AVERAGE WINTER WEATHER.

- When all the warm air registers are at the *high side-wall* location, the fan switch should be adjusted to start the fan when the bonnet air temperature has reached about 110 deg. F., and to shut off at about 25 deg. F. lower than the starting temperature.

When any warm air registers are located at the *low wall, baseboard, or floor* locations, slightly higher air temperatures will usually be required. The fan switch should be adjusted to start the fan when the bonnet air temperature has reached about 130 deg. F., or slightly less, and to shut off at about 25 deg. F. below the starting temperature.

- IT IS DESIRABLE THAT THE BLOWER BE STARTED WHEN THE BONNET AIR TEMPERATURES ARE LOW. The LIMIT SWITCH should be set, independently of the fan switch, so that the bonnet air temperature cannot exceed about 175 deg. F. Often the limit switch cannot

be adjusted independently of the fan switch. In this case, set the fan switch at the lowest bonnet temperature which will heat the house in the most severe weather.

- All control equipment is not equally sensitive, equally precise in calibration, or equally effective at all locations of the controls. In any case, the principles stated in items (e) and (f) of operating the blower at relatively low bonnet air temperatures should be followed.
- Set the blower for the **LOWEST POSSIBLE SPEED** to give the volume of air required to heat the house in the most severe weather.

#### Furnace with Separate Blower

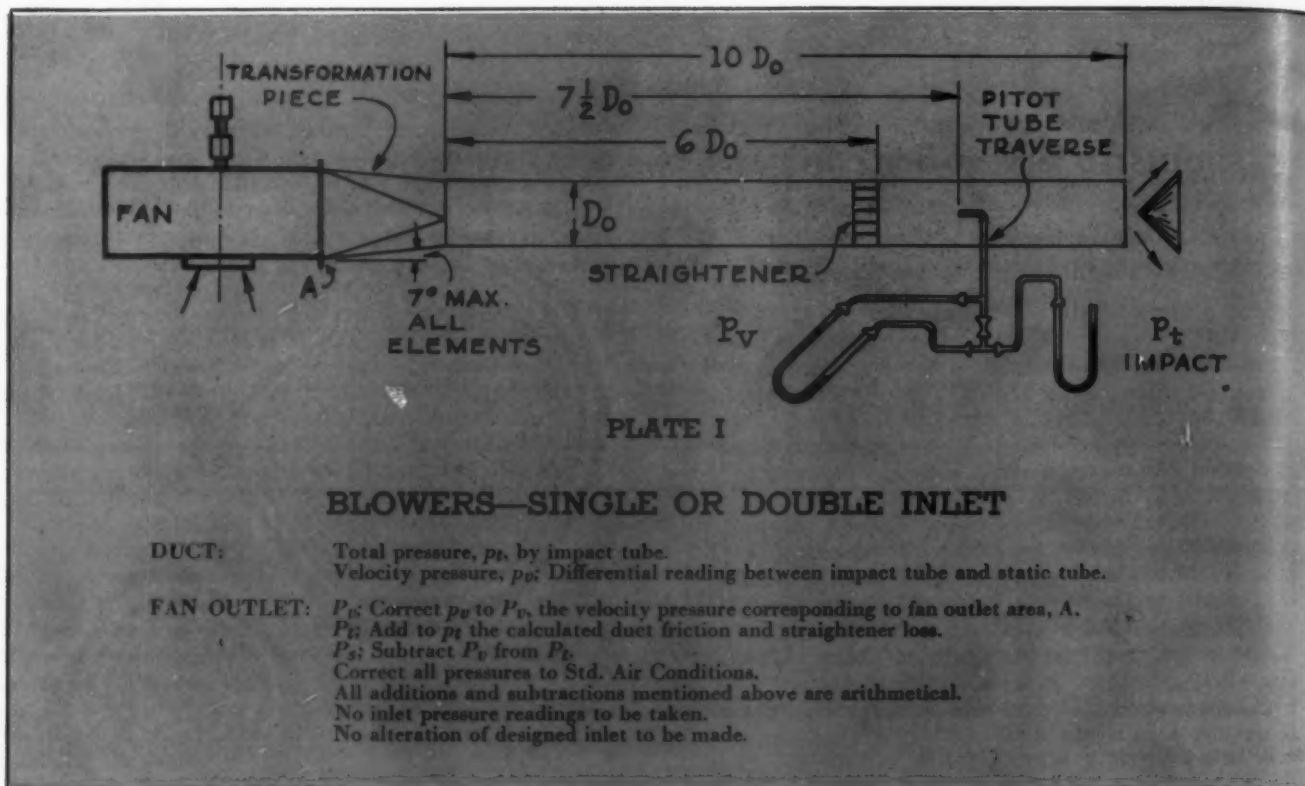
When a heating contractor purchases a separate blower and attaches it to a furnace, he is assuming the duties of the furnace engineer, as outlined in a preceding section. The task of combining the furnace and the blower into an efficient working combination is in many ways not a simple one. The accompanying Table 5, taken from the Manual, gives a simple blower selection table, in which all that is required is the Btu. heat loss from the house.

Column 2 in Table 5 shows approximate MINIMUM diameters of the blower wheel. It is considered good practice to use blower sizes that are larger than those listed and then to operate the blower at low speeds. The wheel diameters listed are nominal diameters and may not correspond exactly with actual wheels available. Where the wheels are not of the double width, double inlet type, the data given in Columns 4 and 5 will enable the heating contractor to select a proper sized wheel from a blower catalog.

In any given installation, as the speed of the blower is increased, the following results will be obtained:

- The noise and vibration increases,
- The pressure available increases,





#### Test Setup for Rating Furnace Blowers.

(Reproduced from "Standard Test Code for Centrifugal and Axial Fans"—third edition, Bulletin No. 103, price 25c, published by National Association of Fan Manufacturers, 5-208 General Motors Building, Detroit, Michigan)

3. The volume delivery of the blower increases, and
4. The power consumption increases as the cube of the speed.

Table A shows that a small increase in blower speed results in a very large increase in power consumption. For example, if the blower speed is increased by 10 per cent, the power consumption is increased to 1.3 times the original value, or 30 per cent. All too frequently, in an attempt to force more air out of an improperly designed duct system, the speed of the fan has had to be increased, with the result that noisy and power-consuming blower operation has been the result. Proper duct design and proper operation of the blower, as outlined in the Manual, should eliminate any necessity for noisy, high-speed operation.

*The following material is a reference source for advanced students of the Textbook Series of the Association.*

#### Blower Rating Test Set-Up

Recently a Blower Clinic was conducted at the University of Illinois for the manufacturers of furnace blowers. This Clinic was one of several conducted for specific segments of industry by the National Warm Air Heating and Air Conditioning Association. One of the main items of business was the determination of a Standard Test Procedure to be used in testing and rating furnace blowers. For this purpose, two arrangements shown in the Code of the National Association of Fan Manufacturers, as well as two alternate set-ups, were considered. On Feb. 26, 1945, an engineering committee of the blower manufacturers in conference with Mr. S. H. Downs, president of the A.S.H.&V.E., and Prof. G. L. Tuve of Case School of Applied Science, both outstanding men in the field, decided that the method designated as Plate I should be adopted as the standard procedure for testing and

rating of furnace blowers. Plate I is reproduced in this article. In spite of some limitations, the Plate I method was considered as the most practical of all the alternatives offered. It was also agreed that the blower should be set on the floor during the test. It should be noted that the blower is tested without a cabinet. The blower capacities, therefore, would be larger than if the setup consisted of a blower with cabinet. The furnace engineer, who is contemplating the selection of a blower for a given furnace, should consider this pressure loss in the cabinet along with all the other pressure losses of casing, filters, and ducts. The use of a standard test setup does place all blower ratings on a comparable basis.

#### Standard Terminology

The action taken at the Blower Clinic also included the setting up of a standard terminology, which will eliminate confusion resulting from the use of several names for a given part. The terms which were approved as standard practice are shown in Figs. 3, 4, and 5.

**TABLE A**  
**Blower Speed and Power Consumption**  
(For a given duct system having a fixed setting of dampers)

If the speed of a given blower is increased by:	The power consumption will be:
10 per cent	1.3 times the original rate
20 per cent	1.7 " "
30 per cent	2.2 " "
40 per cent	2.7 " "
50 per cent	3.4 " "
60 per cent	4.1 " "
70 per cent	4.9 " "
80 per cent	5.8 " "
90 per cent	6.8 " "
100 per cent	8.0 " "

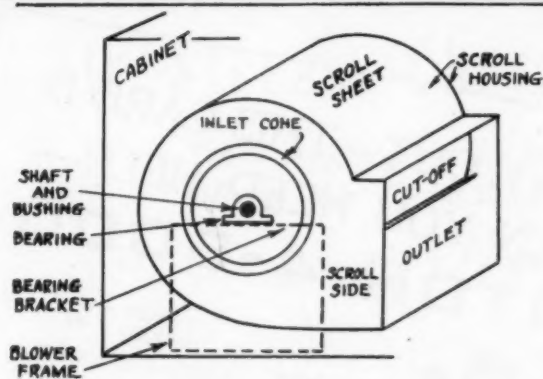


FIG. 3  
DIAGRAM OF BLOWER

OTHER PARTS FOR BLOWER  
AND MOTOR THAT ARE  
NOT ILLUSTRATED.

THRUST COLLAR (for shaft)  
WASHER (for shaft)

BLOWER PULLEY

MOTOR PULLEY  
VARIABLE SPEED (V.S.) PULLEY  
STEP PULLEY

BELT  
MOTOR MOUNT

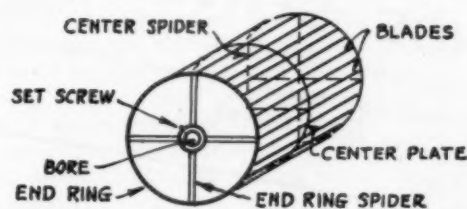


FIG. 4 BLOWER WHEEL

FOR A SINGLE-INLET  
BLOWER, A BACK PLATE  
IS USED

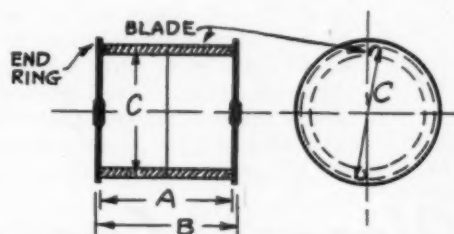


FIG. 5. WHEEL DIMENSIONS

A = EFFECTIVE WIDTH.  
B = OVERALL WIDTH,  
C = WHEEL DIAMETER

THE NOMINAL WHEEL  
DIAMETER IS THE  
ROUNDED VALUE OF "C"

### Catalog Ratings on a Uniform Method of Presentation

The group at the Blower Clinic also agreed to adopt a uniform method of stating catalogue ratings, so that the heating contractor would be able to find the information placed in the same order, and in the same units, regardless of which manufacturer's catalog he was examining. The suggested order of catalog listing is shown in Table B.

### Sidewall Clearances Between Scroll Side and Cabinet

The blower manufacturers were agreed that the design of the cabinet surrounding the blower had a material effect on the capacity of the blower. The air entering the blower should not be unduly restricted. In many cases, the space between the scroll side and the side of the cabinet is so narrow that the resistance to air flow is large and the blower capacity is markedly reduced. The following recommendation was made by the group:

"The clearance on each side of the blower (between scroll side and the side of the cabinet) should be not less than  $\frac{3}{4}$  of the wheel diameter. It should be made clear that an improvement will be obtained if greater clearance is used, and a definite decrease in perform-

ance can be expected with less clearance."

### Provisions in the Yardstick

Fig. 6 shows provisions in the Yardstick for Classifying blowers and motors used in Warm Air, Winter Air Conditioning Systems. This is Section No. 8 in the Textbook Series on Practical Warm Air Heating.

TABLE B

Standard Form for Showing Catalogue Rating of Furnace Blowers.

Unit or Model Number	Volume, in c.f.m.	Outlet Velocity, in ft. per min.	S. P. in $\frac{1}{4}$ in. steps			
			c.p.m.   hp.		r.p.m.   hp.	
Model No. A Outside wheel diameter, a in. Width of wheel, b in.						
Model No. B Outside wheel diameter, c in. Width of wheel, d in.						
Model No. C, etc.						

TO YOU - WHO LIVE OUT - THIS CARD IS  
DIRECTED - WHEN YOU NEED HELP -  
**DIAL CANTON 4-5000**

HANG  
THIS  
CARD UP

**URBAN SERVICE**

OWNED AND  
OPERATED BY  
NORRIS L. URBAN  
HAROLD R. URBAN  
JACK R. URBAN

**MAINTENANCE SERVICE FOR**  
WATER & STEAM PUMPS · HEATERS · BOILERS · FURNACES · STOKERS  
MOTORS · ELECTRIC CONTROLS · BLOWERS · AIR CONDITIONERS  
\* SERVING OVERSEAS WITH THE ARMED FORCES

Thousands of these cards are  
mailed to farmers and small town  
homeowners.

## Service - For Almost Everything

When Norris L. Urban's two sons were graduated from high school in Canton, Ohio, father and sons decided to start in business repairing small electrical appliances. That was 1939, and from that beginning the Urbans branched out into servicing pumps, furnaces, blowers, stokers, and other domestic apparatus. As Norris Urban says, "this was a pipe dream, but we made it work."

Son Harold R. has now been in the air corps for more than three years, and has served in Italy since January, 1942. Son Jack is a gunner's mate on a cruiser somewhere in the Pacific. Shortlived as the father and son combination was, Norris Urban expects great things from it after the war.

Meanwhile, the senior Urban, who is a disabled veteran of the first World War, has carried on and expanded his business to include servicing overhead doors, lightning arresters, refrigeration, air conditioning, Neon signs and truck signs. In addition, Urban Service, as the firm is called, does industrial and orchard spraying!

Firm headquarters during the war are at the Urban home, but Urban expects to open a sales office in the Canton business district soon.

To keep this wide spread service program operating,

post cards are sent out by the thousand to keep the Urban name and number before the eyes of the rural trade. To simplify service the fully equipped truck shown makes possible much repair "on the spot." Mr. Urban anticipates a busy 1945 in furnace work and is building up a large post-war prospect list for improved heating. As the firm's letterhead states, "We Cover Stark County Like the Dew." And so they do.



The Urban service truck is bright red, gold trimmed and lettered. Carries a derrick, crane, parts, tools, furnaces, blowers.



# Air Stream Characteristics

## Their Application to Registers of Winter Air Conditioning Systems

By John E. Peterson\*

THE character of the air stream issuing from a register has much to do with the comfort attained from winter air conditioning systems. We all realize the uncomfortable effect of excessive air movement or drafts on the occupants of a room. And good heating men know that discomfort can be caused by drafts even though optimum temperature conditions prevail. Many observers lay a high percentage of complaints to this cause. In a broad sense it has been common to all types of mechanical air circulating systems. In the case of winter air conditioning systems, the problem has appeared with all combinations of register locations in common use today.

To simply supply air into a space is not sufficient. Good air distribution requires that air streams discharged from registers of mechanical circulating systems shall be apportioned and diffused in a uniform manner so no part of the occupied zone is subject to drafts. Good practice requires that there shall be no air movement in the occupied zone above 40 fpm. Higher rates of air movement are permissible where occupants are active, but the installer of home heating systems must predicate comfort factors upon the occupants being at rest.

### Velocity Causes "Drafts"

Diffusing the air stream to prevent drafts is a problem of dissipating the velocity of the stream. This has not been satisfactorily solved because the forces involved are small, difficult to measure and observe, and because the paths of deflected air currents bounding off confining walls are unpredictable. It has been a matter for research requiring suitable facilities and time consuming explorations into the air stream, under controlled conditions, in order to learn underlying principles. Several distinguished researchers have made invaluable contributions to the data that is currently available. However, much of it requires considerable study and investigation to interpret its practical application.

When an air stream enters a room it contains energy which has been transmitted into the air by the blower in the form of pressure. This energy is represented by the product of its quantity and velocity. Upon leaving the confines of the register room, air is mixed into the stream by the turbulence between the moving air and room air. This mixing is called "induction."

As induction progresses downstream, the original energy is distributed into an expanding mass of air. As the expansion of the stream continues, the velocity decreases, but the product of quantity and velocity

remains, for all practical purposes, constant. Thus, the energy at any point downstream is equal to the initial energy at the register and the relationship becomes an application of the conservation of momentum theory and is expressed:

$$(1) \text{CFM}_1 V_1 = \text{CFM}_2 V_2$$

In which:  $\text{CFM}_1$  = Register volume

$\text{CFM}_2$  = Air stream volume

$V_1$  = Register velocity, fpm.

$V_2$  = Air stream velocity, fpm.

The equation is fundamental\* to all air stream problems and indicates that the velocity at any point downstream depends upon the amount of room air that has been induced (mixed) into the stream. That is, if it is required to reduce 400 fpm. register velocity to 25 fpm. air stream velocity at some point downstream, it is necessary to induce room air into the stream to

400

the extent that the air stream volume is  $\frac{400}{25} = 16$

times the register volume. Thus, the importance of induction in accomplishing reduction of the register velocity is obvious.

### Terminal Velocity More Important Than "Throw"

In practice *throw* is the horizontal distance the stream travels before meeting a confining wall, and *terminal velocity* is the velocity at the end of throw. A terminal velocity of 50 fpm. has ordinarily been accepted, but recent investigations indicate lower terminal velocities (say 25 fpm.) insure velocities in the occupied zone being confined within the accepted maximum (40 fpm.).

The induction of room air into streams discharged from straight-flow registers is practically constant, and therefore it is evident that for a given condition of discharge there is only one point downstream which will satisfy a terminal velocity requirement. In other words, 100 cfm. discharged from a straight-flow register (area 36 sq. in.) at 400 fpm. will reduce to 25 fpm. average terminal velocity 26 feet downstream. A wall 13 feet from the outlet would receive a higher impact velocity and cause the stream to splash down the wall, resulting in drafts in the occupied zone. This condition may be overcome by decreasing the register velocity or by inducing the required volume into the stream more quickly and thereby shorten throw.

Obviously, if area cannot be increased, reduction of velocity will decrease register volume, but since volume is a fixed requirement of load conditions, this becomes impractical.

Fig. 1 is a geometric illustration of an air stream

\*Zone Supervisor, Moduflow Division, Minneapolis Honeywell Regulator Co.

Member, Research Advisory Committee, N.W.A.H. & A.C. Assn.

Member, A.S.H.&V.E.

\*A Mathematical analysis of the air stream by the author is available by application to the publisher for those who wish to make further investigation of the subject.

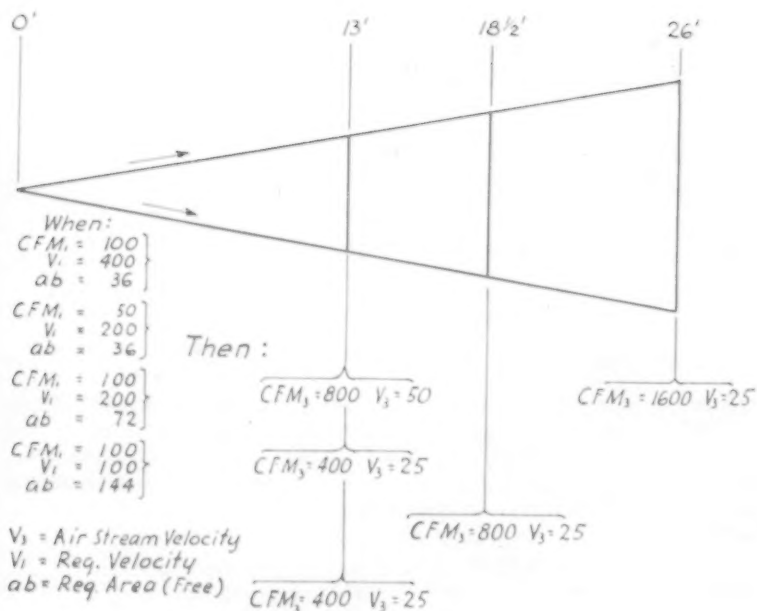


Fig. 1

resents equal cross-sectional air stream areas, average terminal velocities and volumes, and each may be considered to be a wall at which terminal velocity is reached. It becomes evident that air stream angularity may be utilized to dissipate the register velocity by inducing into the stream whatever volume may be required to control throw. This also is an important air stream characteristic.

that will serve to demonstrate the foregoing conditions. The register is straight-flow so the stream is conical and the spread of the edges is uniform—like a cone. Since there are no vanes to spread the stream, the natural spread of the edges forms an angle of approximately  $20^\circ$  and cross-sectional areas are circular. Because the edges spread uniformly the percentage of volume increase downstream is uniform, that is, the rate of induction is constant. The volume is constantly increasing and the velocity is constantly decreasing as the stream progresses, and in this case, when volume increases to 1,600 cfm., velocity will have decreased to 25 fpm.

The stream angularity is similar for all common velocities discharged from straight-flow registers so if it is required to reduce throw to, say, 13 ft., it is necessary to reduce register velocity to 200 fpm. Register volume has decreased to 50 cfm. (area constant) and when the air stream volume increases to 200

— = 8 times the register volume, or 400 cfm., the 25

air stream will have reduced to 25 fpm., which will be 13 ft. downstream. However, this does not satisfy the original requirement of 100 cfm. If area is increased to 72 sq. in., volume increases to the required 100 cfm., but throw also increases to approximately 18.5 ft. Again it becomes necessary to make adjustment of the area and velocity ratio at the register until finally it will be found that it is necessary to reduce register velocity to 100 fpm. and increase area to 144 sq. in. This exemplifies the wide changes of velocity and area ratios necessary to control throw from a straight-flow register.

### "Effluent Angularity" and Induction

Investigation has revealed that larger or smaller quantities of room air may be induced into the stream by varying the "effluent angularity." Effluent angularity means the natural spread of the issuing air cone. If the angularity is narrow, throw extends to a considerable distance; conversely, if wide, the throw is confined. Fig. 2 indicates the effect of air stream angularity on throw. The base of each triangle rep-

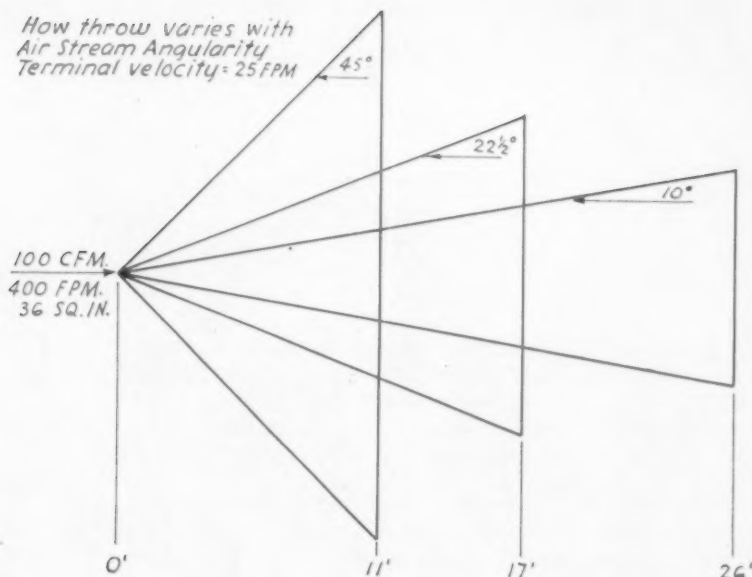
A velocity traverse across the stream, shown in Fig. 1, at 13 ft. and 26 ft. downstream will indicate average velocities of 50 fpm. and 25 fpm., respectively. Since many investigators have considered 50 fpm. to be a satisfactory terminal velocity, this means a wall located 13 ft. from the register would receive an average impact velocity of 50 fpm. But the traverse will reveal high velocities at the "core," decreasing toward the edges of the stream. Tuve,\* an eminent researcher of air streams and air distribution, has made numerous investigations which establish that while the conservation of momentum theory provides a means to determine volume, area and average velocity of the stream, the velocities are not uniform.

As the edges of the stream mix with room air, the center is somewhat protected from this action, and this causes higher velocities along the axis to extend out into the room for a considerable distance before room air can mix into the core. He has determined that this delayed mixing causes core velocities to be in the order of three times the average velocity. This means that at a point down stream where mathematical analysis indicates an average velocity of 50 fpm., a core velocity of 150 fpm. may be expected. If such a stream were projected into the occupied zone, the entire distance in front of the register would be subject to high velocities. For this reason it appears prudent to diffuse air streams from low registers to the highest degree attainable, and in cases of high registers it appears desirable to diffuse the stream into such angularity that terminal velocities are in the order of 25 fpm. The "coring" effect of air streams is an air stream characteristic especially important to installers of winter air conditioning systems.

We have observed various combinations of register locations practically applied or theoretically expounded. An exponent may cite temperature gradients, from either test or theory, supporting a combination and thereby expect a higher degree of comfort. While

\*Entrainment and jet-pump action of air streams by G. L. Tuve, Professor of Heat-Power Engineering, Case School of Applied Science, Heating, Piping and Air Conditioning, November, 1941. Member ASH&VE.

Fig. 2



temperature gradients are important, effective temperature is influenced also by the *velocity* to which the occupant may be subjected. It must be observed that high rates of air movement require compensation for body heat losses from convection and this is accomplished only by *increasing* temperature. Conversely, low rates of air movement, within the accepted maximum, permit a lower temperature. While gradients attained with gravity systems are not as narrow as those with winter air conditioning systems, the quality of comfort enjoyed from the former is still held in high regard.

#### Air Stream Must Not Strike Occupants

The extremely low energy in the air stream discharged from a gravity system allows the air to rise immediately to the ceiling without horizontal projection into the occupied zone. It spreads over the ceiling area and reaches the occupied zone in an essentially gentle downward movement from both loss of temperature and displacement by the continuing supply at the register. In comparison, the energy in the stream discharged from a mechanical system is greater and capable of projecting the air horizontally for a considerable distance. If discharged from a low register, that is, in the occupied zone, the occupants are subjected to varying velocities, depending upon their distance away from the register and the rate of velocity dissipation. If discharged from a high register, above the occupied zone, the occupants are not subjected to high velocities directly from the register, but may be subjected to drafts caused by the air banking down walls, should the stream reach a wall at a high velocity. Thus, discharge of an air stream into a room in such manner that it causes high rates of air movement in the occupied zone, either from projecting the stream directly into the occupied zone or indirectly from banking down the walls, may offset the comfort expected from close temperature control.

These velocity disturbances account for complaints while temperatures maintained appear ideal. Those of us who have lived with these conditions realize there has been a need for considering the characteristics of the air stream in relation to human comfort.

#### How to Dissipate an Air Stream

Numerous methods to dissipate the register velocity by diffusing the air stream have been investigated. Converging the stream by adjustment of vanes at the leaving plane of a register causes a narrowing of the stream a short distance downstream, after which it assumes the same natural expansion as from a

straight-flow register. This constriction or delayed resumption of natural angularity causes a slightly longer throw and indicates no energy has been spent by impinging the individual streams emanating from between the vanes against each other. While this characteristic is seldom required for home heating systems where the problem generally becomes one of shortening the throw, it may be observed that it has its application in cases of long rooms found in commercial or industrial applications where it is desirable to provide proper apportionment of air to an area distant from the supply.

Dividing the register area into small openings has little influence on diffusion because the individual streams or jets are quickly pushed together, resulting in characteristics similar to straight-flow. Long, narrow, horizontal slots require excessive aspect ratios before sufficient diffusion is attained to warrant their use under ordinary construction conditions.

#### Effect of Register "Vanes"

As these means to diffuse the stream are considered, it becomes evident that the room air tends to push the stream into definite boundaries. To overcome this effect, it is necessary to *diverge* the stream by vanes which direct it into required angularities. This accomplishes diffusion by dissipating the energy into whatever volume may be required to reduce velocity downstream and has a definite effect on throw.

The fundamental throw formula;\*:

$$(2) T = K_1 V_1 \sqrt{ab}$$

In which:  $T$  = Throw, ft.

$V_1$  = Register velocity, fpm.

$ab$  = Register area, sq. in.

$K_1$  = A constant

indicates that throw varies directly with velocity. But in practice velocity cannot be varied without a change in area since the volume required to heat a space is fixed by load conditions. Therefore, it becomes con-

\*The Rationale of Air Distribution and Grille Performance by C. O. Mackey, Refrigerating Engineering, June, 1938.



venient to express the formula in terms of volume:

$$(3) T = \frac{K_2 CFM_1}{\sqrt{ab}}$$

In which:  $CFM_1$  = Register volume  
 $K_2$  = A constant  
 $T$  = Throw, ft.  
 $ab$  = Register area, sq. in.

Equation (3) indicates that throw varies inversely with the square root of the area when volume is constant. This means that a large volume and short throw requires an extremely large straight-flow register and is not economically practical because to control throw by varying area would require a wide range of register sizes. Further inspection of the equation indicates that throw also varies directly with the  $K_2$  factor when area and volume are constant. The values of the  $K_2$  factor for a given terminal velocity are almost entirely a function of the angularity of the air stream and may be varied by adjusting the vanes of an adjustable vaned register. Thus, a reasonably small register may be selected and permit a wide range of cfm. and throw combinations by control of air stream angularity. However, it is important to observe that angularity of the air stream refers to the included angle from one edge of the stream to the other and that this divergence is accomplished by carefully adjusting the vanes progressively from straight at the center to the required angularity at the ends. Thus, a velocity traverse a few feet downstream will disclose a uniform fanning out across the effluent angularity of the stream.

#### Effect of Register Design

It is also important that the register design permits wide angularities without high resistance or dampering the required volume through the register. Setting half the vanes to the right and the other half to the left does not accomplish diffusion, but results in two streams each similar to straight-flow, except that the magnitude of the velocities at the core and throw of each is reduced by the division. This is an important register function.

Table 1 provides the values of  $K_2$  for various air stream angularities and when used with equation (3) permits adjustment of a vertical vaned register to the degree of angularity that may be required.

Table 1

Horizontal Effluent Angularity	$K_2^*$
20°	1.54
30°	1.31
45°	1.05
60°	.89
75°	.77
90°	.68
105°	.59
120°	.52

\*25 fpm. Terminal Velocity.

In practice throw is a known requirement determined by physical construction conditions, and since it has become a general practice to standardize register sizes, the selection of air stream angularity becomes a simple calculation. For this purpose it becomes more practical to express equation (3):

$$(4) K_2 = \frac{T\sqrt{ab}}{CFM_1}$$

The horizontal effluent angularity of the stream may be determined by solving for  $K_2$  and reference to Table 1.

#### Examples

##### Example 1.

Given: 100 cfm. is required to heat a room 12x12 ft.: Register area (free), 36 sq. in.

Required: Solve for horizontal effluent angularity of the stream.

$$\text{Solving: } K_2 = \frac{12 \times 6}{100} = .72 = 85^\circ \quad (\text{approx.})$$

(Equation (4) and Table 1.)

##### Example 2.

Given: 45 cfm. is required to heat a bathroom 5x10 ft. Register area (free), 28 sq. in. Register located in center of 10 ft. wall.

Required: Determine horizontal effluent angularity of the stream.

$$\text{Solving: } K_2 = \frac{5 \times 5.3}{45} = .59 = 105^\circ \quad (\text{Equation (4) and Table 1.)}$$

#### Conclusions

The foregoing provides a practical means to determine air stream angularities required to dissipate the initial energy of an air stream at the end of its throw. Application to actual cases will soon disclose the practical value of a working knowledge of the fundamental characteristics. Reference has been made to velocities downstream from a straight-flow register and it must be observed that under any condition the velocities downstream always range from that at the register to that at the end of throw, and the intervening distance is subject to varying velocities depending upon the distance from the register. Obviously, much of this distance is transversed by velocities higher than the accepted maximum when the stream is projected into the occupied zone. The accepted maximum (40 fpm.) is not low because velocities lower than 50 fpm. were definitely perceptible on parts of the bodies of the personnel who made traverses of the air stream in the Minneapolis-Honeywell Co. test rooms where air streams were investigated.

Further study by practical operators will contribute to an understanding of their problems of high rates of air movement in the occupied zone. Indeed, it is indicated that further research into the influence of air streams on room circulation will permit abandoning "trained arrows" and contribute further to human comfort.

AMERICAN ARTISAN

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Heavy duty gages, as shown above, can be equipped with heavy duty stops or with gaging rods or "fingers" (see text) for light gauge sheet work. Left photo shows "fingers," right photo shows heavy duty angles. (Photos from Cincinnati Shaper Co.)

## Getting the Most Out of Your Press Brake

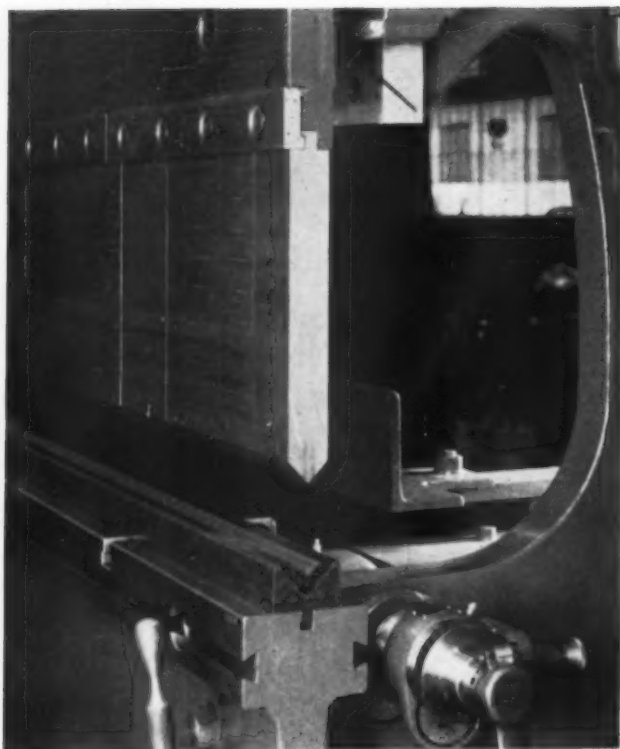
1001 Standard and Special Bending  
Forming, Flanging, Punching Operations  
Your Press Brake Can Perform

By Ernest E. Zideck  
Sheet Metal Consulting Engineer

## How To Use Press Brake Gages

**P**ress brake gages are variously mounted on the interior structure of the two uprights and the interior frontal base of the brake. Although certain makes of the brake provide also for up-and-down adjustments of the so mounted gaging apparatus, its general function is to hold in position and move forward or rearward, either a bar or gaging fingers. To these fingers reach the edge of the metal under processing. The movable arrangement permits adjustments of the gaging bar or fingers to a position parallel with the dies, or with one end closer to the dies than the other end. The adjustment depends on whether we want to brake the metal uniformly its entire length, or want a 1-inch flange at one end of the piece and 2 inches or more width at its other end.

Certain makes of press brake have arrangements for doing the gage adjustments from the front of the brake, while other makes require the operator to step to the rear of the brake to make the adjustments. In either case the gage moves on threaded shafts, like a vise. The adjusting work consists of turning the wheels or the handles either left or right until the fingers of the gage come in contact with either the ruler or the piece of metal used for the purpose. The best gaging for press brake work is obtained by positioning the strip of metal to be braked on marks or dots made for the purpose on the first strip, letting the die descend to hold it tight, and then adjusting the gage to contact the edge of the metal. Minor adjustments of the gage are necessary in most cases after the first



As an aid to quicker setting up, press brakes can be furnished with front controlled back gages with direct reading micrometer dials. The die in press brake is a "box" die. (Cincinnati Shaper Co. photo.)

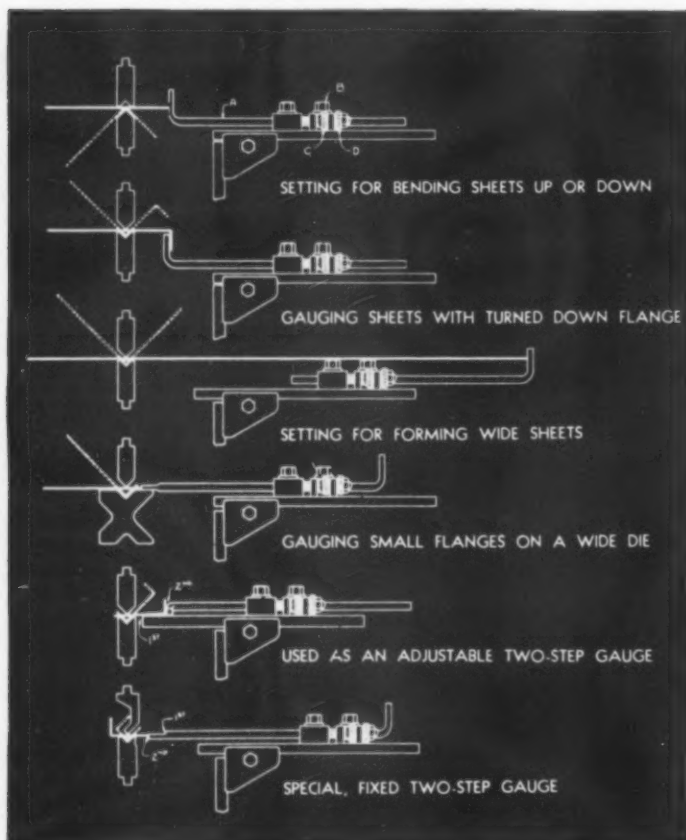
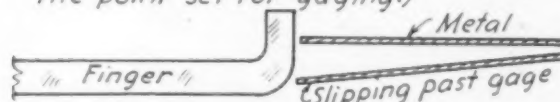


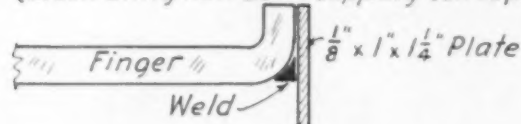
Chart A—Six methods of gaging sheet metal are shown above. This system is especially suited to multiple or progressive forming. Text in adjoining column explains operation. (Cincinnati Shaper Co. chart.)

### Detail A

(Illustrating slipping of metal past the point set for gaging.)



(Illustrating how above slipping can be prevented)



One trouble with the usual "fingers" is slipping of the metal on the round bottom. This can be corrected as shown.

formation is completed and the width of the flange is inspected.

In the accompanying illustrations of the six methods of gaging sheet metal for press brake operations (Chart A), we see an improved system for the use of fingers which do the gaging. This system is especially useful if we use the brake for the so-called multiple progressive forming, performed on one brake with multiple die set-ups, and using the same stroke of the ram for diverse forming work. In this connection there might be mounted on the two uprights a horizontal bar, heavy angle or plate, provided with bolt holes or slots for bolts, as the case may be. The fingers may be mounted on slidable bars, slotted for bolts, with each individually adjustable by tightening the bolts to the horizontal plate connecting the two brake uprights. In the first illustration of the gage setups, we see the finger marked "A." The letter "D" indicates a final adjustment of the finger after it has been moved in the slots to the approximate position. The letters "B-C" indicate a set-screw, tightened after the finger has been finally adjusted. Varying constructions of these fingers on a plate or angle-bar connecting the two brake uprights are in vogue. But the principle of all such constructions is the same: to provide for independent, slidable means which secured in position will prevent the sheet metal butting against the finger, moving past its predetermined location for braking operation.

In Fig. 2 of the illustrations of the gage set-ups, we see that we can use the identical finger for gaging the metal after it has been braked once, hooking the turned down flange over the finger. In Fig. 3 we see the finger-holding bar turned about on the plate to which it mounts, permitting the sheet metal to reach far to the rear in the brake. As shown in Fig. 4, we can reverse the finger formerly used or one so shaped at its other end for sliding over the female die far enough to permit holding in position the strip of metal for a narrow flange braking. Fig. 5 illustrates a gage set-up permitting a two-step gaging of the metal. But as emphasized in the foregoing discussions of gaging sheet metal in press brake operations, we would rather turn about the strip under formation, and gage both flanges from the sheared edge, as shown in Fig. 6 of Chart A.

Regardless of what arrangements and facilities the manufacturer of the brake provides for gaging, it is

largely left to the press brake operator to utilize the arrangements as well as possible for certain classes of work and supplement the facilities with his own makeshifts, or fingers of his own design. For instance, fingers having a radial bend (as shown in use in Figures 1 and 5, Chart A) permit the sheet metal edge to slip below the straight portion. This results in trouble and inaccuracies in the formatures. A better finger, where it can be used, is one with a straight plate welded to the finger shown in the Detail A.

In sheet metal shops which do not concentrate on a specialty, but have a variety of products, press brake work is being done almost exclusively by about a dozen standard dies. The diverse formatures in the metal are done progressively, one bend at a time, although several brakes might be engaged in the work, a certain die-set being operated in one brake and another set in the second brake, and so forth. But on jobs not too long to require the whole length-capacity of the brake, and when at least two pieces of the metal can be held over the dies without protruding too far out over the die-holds, at least two formatures or bends can be processed at the same time by having the several die-sets mounted in the one brake. It is not necessary that the dies be of exactly the same length as is the bed or the ram. Dies can protrude several inches over them without injury to the brake or to the piece of metal formed.

In Photo 1 we see a press brake with three die-sets mounted and doing diverse shaping work. The first and second operations, being identical, are performed in the first die-set shown at left in the brake. The third operation is done in dies shown in the middle of the brake. And the fourth and final operation is done in "flat" dies mounted at the right in the brake. If there are three men available for servicing this one

brake, each of the three stands in front of the die-set which he services, handling the metal through the certain formature. However, if enough men are available for the work, there would probably be four die-sets and four men operating, each attending to only one metal-bend. The man at the extreme left would pick up the metal from the bench or truck, hold it in the dies for the first operation, hand the metal to the man at his right, pick up another piece, process it while his neighbor does the second operation, hand it to the next operator working the "V" dies, who would then hand it to the final operator for "squeeze down" of the metal. If only one man operates the brake, he picks up the metal from the truck, makes the first and the second operations on the same die set-up, steps to the right for making the "V" bend, moves to the flat dies, squeezes the metal and deposits the so formed strip on another truck or wheeled bench.

### Shearings Must Be Uniform

As seen in the insert drawings in Photo 1 below the first and the second operation, the gage set-up remains the same for both operations, the workman simply turning about the metal for the other sheared edge to come against the gage. It is essential that the sheared blank be of uniform width, otherwise the finished strip would vary in the "V" formed width of the third operation and result in discrepancies in the doubled up metal resulting from the fourth operation. If these strips were to be joined one to the other, or if there were rivet or bolt holes provided in the two flanges, there would be no "fit." The expanding gage shown above the "third operation" can be substituted to advantage (and if there are a sufficient number of pieces to be processed through this "V" formation to warrant the work) by tack-brazing or tack-welding a

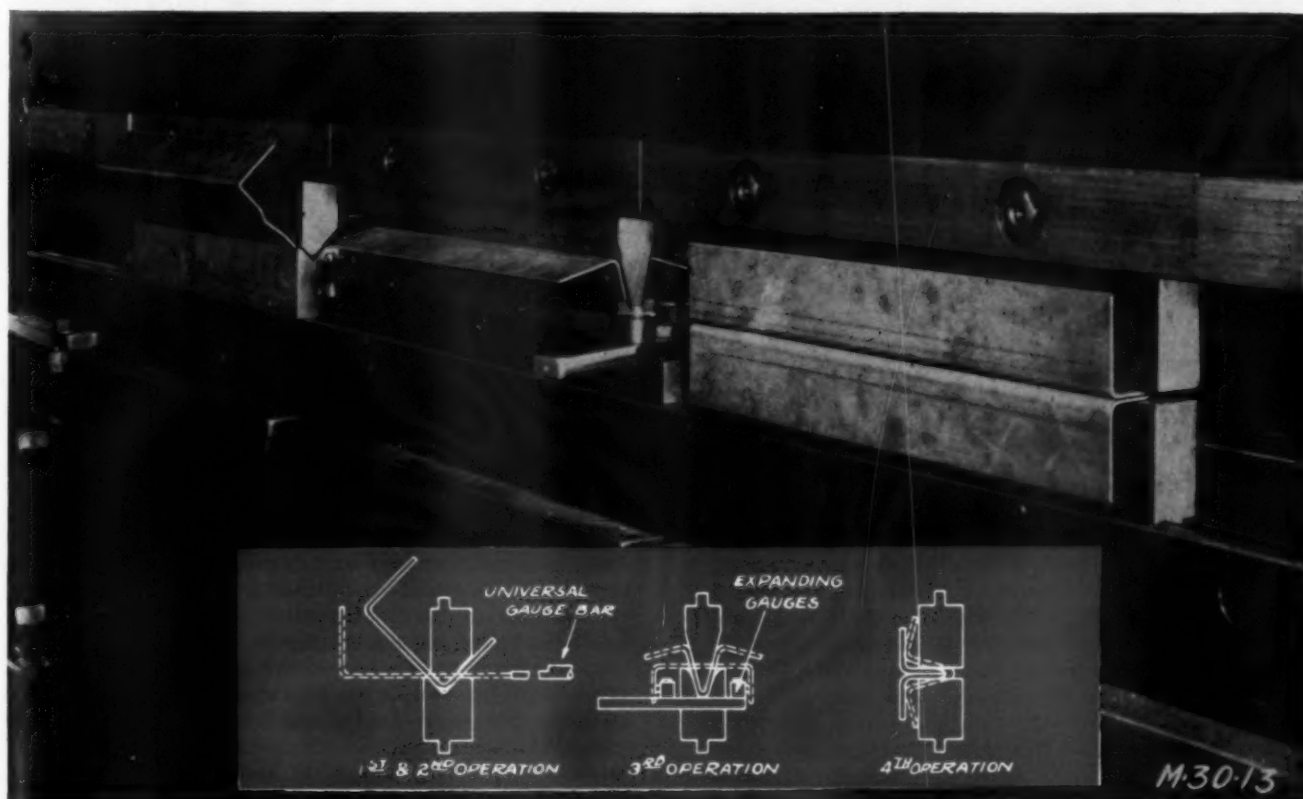


Photo 1—Progressive forming completes with one handling (one man or several) on one machine, operations which otherwise would require several brakes and handlings or several set-ups and handlings on the same brake. The text above explains the sequence followed in this set-up. (Cincinnati Shaper Co. photo.)



shaped rod to each end of the female die, with the flanges coming from the first and the second operations sliding over the upturns of the rod. The final operation, that of squeezing the metal in the flat dies, is done without the use of gages.

In using short pieces of the dies for brake work, the tool man who is commissioned to cut the dies into pieces should observe the following: (a) dies should be cut so that the ends fit together again whenever a longer die is needed; (b) the mere cut in the die will not leave marks in the metal processed through the pieced-together die set-up, but the metal would show marks if the die-pieces show a gap between them over 1/16 inch, or if the pieces are not arranged uniformly in the die-hold, one protruding over the other. Then, obviously, the practicability of mounting the individual die lengths in the die-holds on the ram should be considered, granting that the above has been considered and observed, the cutting up of dies received from the manufacturer into as many pieces as required by the particular job will not impair their usefulness in another job done by their being pieced together.

### Multiple Gaging

In any use of the single gaging-bar press brake for multiple die set-up work, difficulties will arise in that the operator must provide for multiple gaging. The conventional press brake has gaging arrangements operated from the rear or the front which will do good service in the gaging of long metal pieces, but whenever there are multiple set-ups the operator is called upon to use the standard gaging arrangement as far as is practical for the job at hand and provide additional gaging for the remaining set-ups. This is not very difficult to do in view of the fact that the standard gaging provisions will permit fastening to them, by clamps or otherwise, strips of metal which will do the gaging on shorter jobs in any number. In this connection again must be considered the total of the pieces to be processed and whether the special gage set-up could be done in less time than it would take to do each single formature in succession on the same brake. The advantages of having more than one brake in the shop then becomes apparent; we can use one of the brakes with standard gage adjustment for one operation and the other brake for another operation. Unless the shop is doing work in lengths of over 8 feet, this length of the metal strips being a rule and requiring press brakes of this or greater length, it will prove an advantage to have more brakes of from 3 to 6 feet length on which to do the shorter jobs.

### Corrugating Sheet Metal

As shown in Photo 2, smaller corrugating jobs can be done by the comparatively simple die set-up which consists of the male die having two adjoining corrugations of the desired size and of two reciprocating lower dies lodged in a die-hold permitting the one die to remain stationary while the other half reposes on a spring arrangement and moves automatically above the first half on release of the ram upward. This upward moving half of the die acts as a receiver for the first corrugation formed, with the upper die closing over it and holding it in position for the second corrugation to form by the upper die pressing down the metal over the stationary half of the lower dies. In other words, the lower half-die operating on springs functions as a gage, preventing the metal from moving either back or forth while the next successive forma-



Photo 2—Single purpose type die for shallow corrugations. Forms one corrugation at a time. Last formed corrugation in spring die acts as gage. (Cincinnati Shaper Co. photo.)

tion is in progress. The springs under the one die-half are strong enough to prevent the slipping of the metal struck by the other die-half.

By providing a bench or table in the rear of the brake for the corrugated sheet to slide rearward as the corrugations are being formed, the bench or table having a smooth surface (preferably metal covered wood) and positioned on a level with the lower dies, the formatures of the corrugations progress in a rapid succession—in fact, the forming is done just as fast as the operator can make the ram move up and down. If there is no turning about of the sheet or other complications and the once formed corrugation automatically lodges over the protruding lower die, the operator need only feed the sheet rearward by one step and release the ram for the next successive corrugation to be formed. This is rapid work, and as it can be done with the inexpensive die-set illustrated, it pays to have one or more sizes of the forms on hand. Corrugated sheet metal is being used widely for stiffening and lining and because we can corrugate any narrow piece in the set-up, we shall find many uses for it.

### The Use of Filler Blocks

In the preceding discussion of corrugation forming we have left unmentioned the obvious futility of moving the ram its full upward distance when the corrugation might be only one inch high and the handling of the sheet might call for only two-inch free space between the stationary die and the die held in the ascended ram. In such cases, where we can do much more work and more accurate work by eliminating, so far as possible, the distance between the two sets of forming dies and the moving of the ram over a long distance when a short distance will do the identical work, we make use of what we call "filler blocks." In the case of the corrugating work, where the die itself performs as a gage would, we can use a filler block mounted on the bed of the brake; that is, in the stationary die-hold, with the upper die mounted directly in the ram. In Details B and C we see illustrated the uses of these filler blocks. The letter A especially indicates the filler block mounted in the lower die-hold, with the die proper being held in the block. A similar arrangement is illustrated under the letter C in Detail C of the filler blocks. The use of the blocks shortens the travel distance of the ram

both ways, downward and upward, and the operations of the brake are that much more rapid in succession.

As will be observed in the several views presented under Detail B, the filler blocks used consist in most cases of grooved steel blocks (or bars) of a width corresponding with the width of the base die-hold. The grooves are fashioned to receive the commonly  $\frac{1}{2}$  inch wide prong of the press-brake die. One of the grooves is provided with a steel bar twice the depth of the groove in the standard press brake die. This bar, with one half protruding over the bottom face of the block, furnishes the prong by which the block is held in position in the die-hold. The upper face groove receives the prong of the die proper, or if there are several blocks, one is mounted upon the other by these means. Needless to say, the blocks must be smoothly machine-finished upon the faces grooved and must be of a uniform height. Also, the block should not be much narrower than is the base that holds the bottom die because a narrow block might wiggle and not provide the secure base for the die which must be in the exact position of the upper descending die.

### Universal Die Aids Work

As seen below, "C" in Detail C, the filler block used here is fashioned upon its upward face to hold what we call the universal female die. Commonly, this universal die is grooved with one shallow and one deep 90 degree "ditch" and with one "V" die ditch, while the fourth face remains flat. As this universal die is subjected to successive use in many shops, the block on which it is mounted should be fashioned as shown in Detail C because there is no prong in this die to insert in the die-hold. The universal die facilitates the work of the operators in that they need only turn the die to another face for use with the particular male die instead of removing and replacing the female counterpart. As shown in the upper right view of Detail C, the block above referred to can be used for any other die that is held in it by its prong. The use of filler blocks between the ram and the die proper is less practical owing to absence of means in the standard blocks of securing the die in them. Also, the difficulty of gaging the metal by standard gages that are part of the brake should be considered before we decide to use any filler blocks. An elevation of the lower die caused by inserting a filler block below it might also elevate the sheet metal that is to be gaged above the reach of the mounted gaging arrangement.

### Dies Must Lie Secure

Filler blocks are standard accessories furnished ready for use by the manufacturer of the brake. One advantage of getting the blocks from the manufacturer is that the grooves and tongues in them will fit the grooves and the tongues of the dies, with elimination of the "built-up" blocks wiggling or otherwise tending to bring out of position the die proper. One such "built-up" is shown in the upper right view of Detail B, with the blocks much narrower than the base, which should be avoided for reasons given above. It is true that the descending male die will ultimately find its way into the form of the lower die. But if the "built-up" tends to bring the narrow "V" die female counterpart out of position, which especially happens on lengths over eight feet, there is sure to be trouble. Heavy gauges of metal cannot be worked satisfactorily with the lower die insecure in its position.

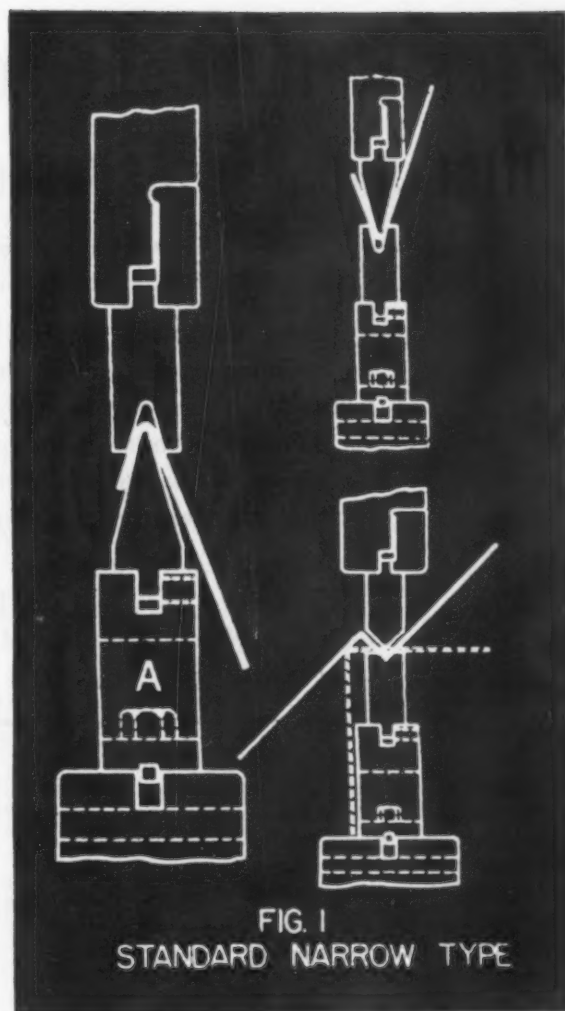


FIG. 1  
STANDARD NARROW TYPE

Above, Detail B; Below, Detail C—Filler blocks close up the operating space between dies, thus reducing the length of die travel and speeding up operations. Text in adjoining column explains use. (Cincinnati Shaper Co. details.)

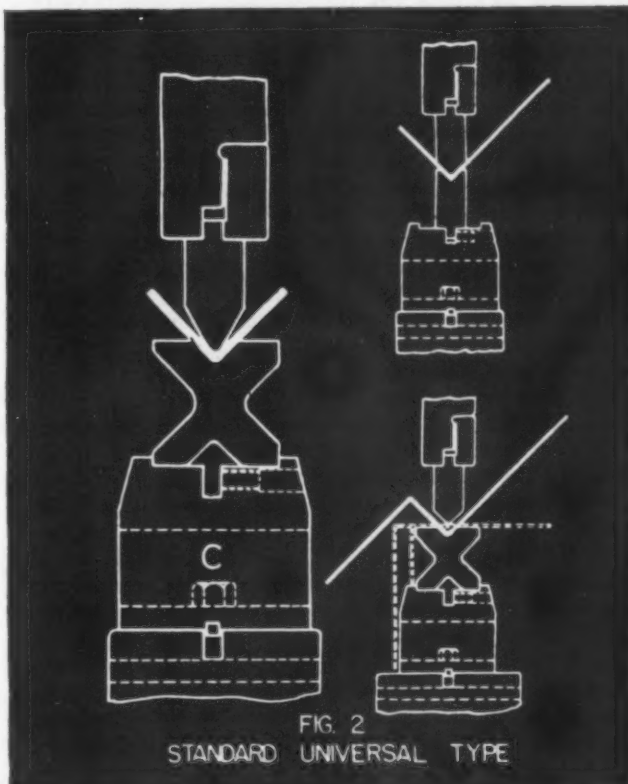


FIG. 2  
STANDARD UNIVERSAL TYPE

# Sheet Metal Contractors Should Prepare To Offer and Use Asbestos-Cement Duct and Board

These materials—where they convey air or house air handling equipment—have been awarded to the sheet metal trade. These materials offer several definite advantages over metal plus insulation. "Careyduct" comes in packaged form; "Firefoil" as sheets—all that is necessary for sizing is a saw.

By Louis L. Narowetz  
Narowetz Heating and Ventilating Co., Chicago

Sheetmetal workers, as mechanics, have had awarded to their jurisdiction the fabrication, assembly and erection of "Careyduct." Following is the ruling handed down by the Building Trades Department of the American Federation of Labor:

"The preparation, cutting, fitting, installation and erection of 'Careyduct' shall be the work of the members of the Sheet Metal Workers' International Association."

Beyond serving the war effort as a substitute during the last three years, it is now apparent that in addition to answering the purpose of ductwork Careyduct has features of isolation as a sound deadener and insulation to reduce the transmission of temperature. Ventilating contractors should recognize the above features and introduce them to their clients.

Our firm had occasion to use Careyduct in a retail shoe store conveying air for cooling. Although it is a commonly accepted understanding that ductwork in conditioned areas need not be covered to prevent sweating, it has been our experience that owing to the low temperature of the air in the duct system and because of uneven diffusion in the space, there is apt to be precipitation on the duct surface. If the duct is metal and cold water painted, this precipitation of moisture will result in dissolution of paint and unsightly streaked surface.

The use of Careyduct with its insulation feature solves this requirement.

In this installation there was used a 20½x20½-inch duct carried full size the entire length of the store, in the corner of one side of the room, with outlets in the center of the side of the main duct. We found that Careyduct, an asbestos product, blended with the plaster surfaces of wall and ceiling, which after cement sealing and painting carried out the architect's idea of decorative harmony.

## Firefoil Panel Board

Another of The Philip Carey Mfg. Company's products useful in air conditioning systems is their product known as "Firefoil" and "Firefoil Panel."

Firefoil is composed of several layers of specially treated corrugated asbestos paper bound together with a special adhesive to make a finished panel which is rigid and strong. It is fireproof and water resistant and is made in various thicknesses from ½ to 2 inches overall.

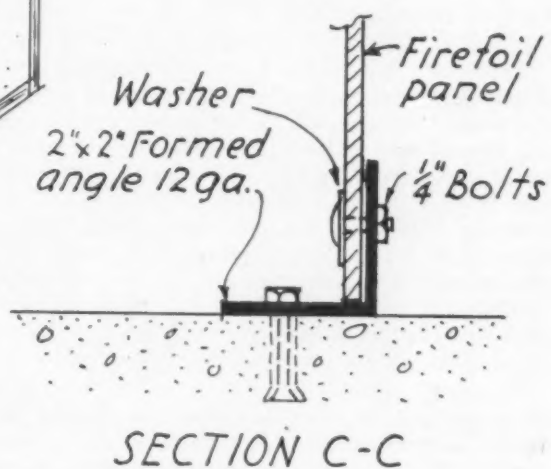
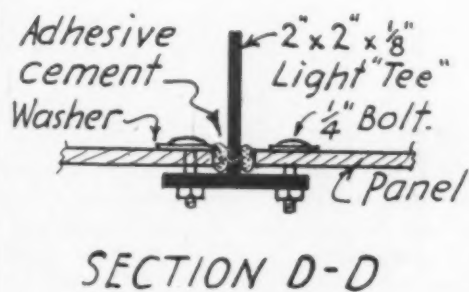
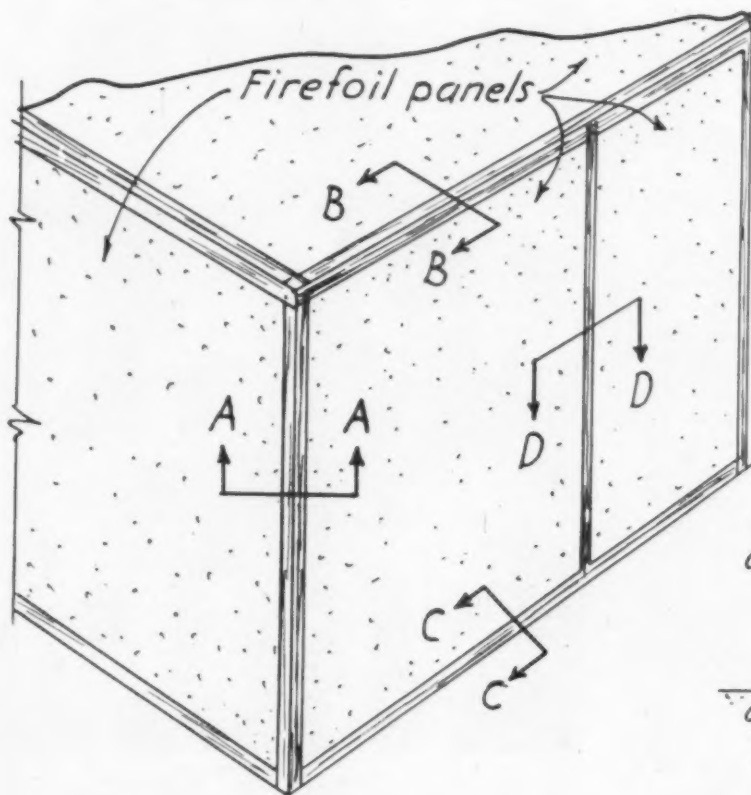
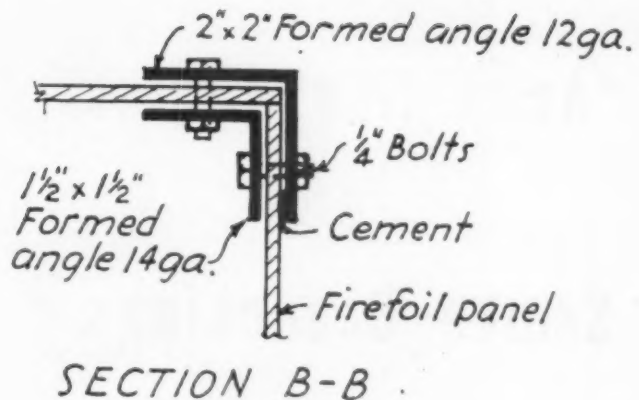
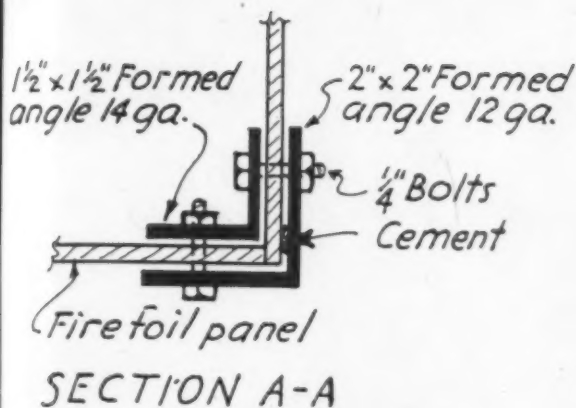
This material is used where the exterior is not subject to abuse or when concealed from view. When exposed to view or subject to rough usage, a sheet of either ⅛ or 3/16-inch "Careystone" sheathing is cemented to each face of the Firefoil with a special adhesive. This product is called Firefoil Panel and can be obtained in the proper thickness to meet the required co-efficient of insulation.

For the ordinary heater casing or to enclose apparatus where cooling is not used, sheets of 1 inch thickness are practical and answer the requirement of housing usually made of sheet metal and "air cell" or other covering. Firefoil Panel comes in sheets 48x96 inches in size which are readily sawed to shape and can be assembled with metal corner angles at the junction of top and sides. One steel member inside plus an outer angle neatly fitted with mitered corners having ¼-inch through bolts, binding casing between inner and outer angles, makes a substantial housing. Base angles bolted to floor hold side sheets of casing in place; door openings are easily cut into side sheets and fitted with metal frame and hardware. The entire casing comprising Firefoil Panel sheets, angles, etc., is sealed with Careyduct "adhesive" which tightens up all joints; presenting a rigid, substantial housing very neat in appearance and less vulnerable to damage than the ordinary covering applied to metal surfaces.

Where cooling is used, 2-inch Firefoil Panel usually suffices and is handled in the same manner as described for heater housing uses. Firefoil is also used for duct systems carrying cold air in unconditioned areas; the thickness of material depending on the insulation requirement.

Since sheet metal workers fabricate, assemble and erect Firefoil, and its use fulfills both items of casing and insulation completed in one operation, it has a





The fabrication details above show that the construction methods our trade has learned with war-time materials are the proper methods for use post-war. We will probably prefer the shop fabricated connectors shown above to light structural shapes. Bolt holes can be drilled in place or punched in the flat. Note cement forms the sealing agent.

distinct advantage and is also less expensive than metal casing plus insulation.

It is my belief that "Careyduct" and "Firefoil" are two products used in wartime ventilation and air conditioning which are here to stay as a post-war product. It behooves sheet metal contractors doing air conditioning work to familiarize themselves and their

organization with these products so that sheet metal workers whom they employ may handle this material awarded to them by the American Federation of Labor Building Trades Department in the construction industry. Since Philip Carey Company products are union-made, there is no resistance to their use for labor reasons.

# "Accordion" Joints for Smoke Breechings

By George H. Laws

**T**HE design of three different types of expansion joints is shown on the detail drawings.

In the construction of steel breechings conveying high temperature gases of combustion from steam boilers to stacks, provision must be made in the breeching to compensate for the expansion and contraction of the metal between all fixed points. In the 3/16 in. plate breeching shown on the drawings, the "accordion" type of expansion joint "C" is specified.

Type "A" is a simple form of expansion joint and is sufficient for smaller installations. As indicated on the detail, the ends of the sections forming the joint are spaced two inches. A sleeve of the same gauge metal and six inches long, is secured to the outside of one section of the breeching. This sleeve extends over the outside of the opposite section, and is constructed so that it is a sliding fit, to move freely in the expansion pocket provided on this section. Reinforcing angles of sufficient size to hold the breeching plates in alignment, are provided on each side of the expansion joint, all around the breeching.

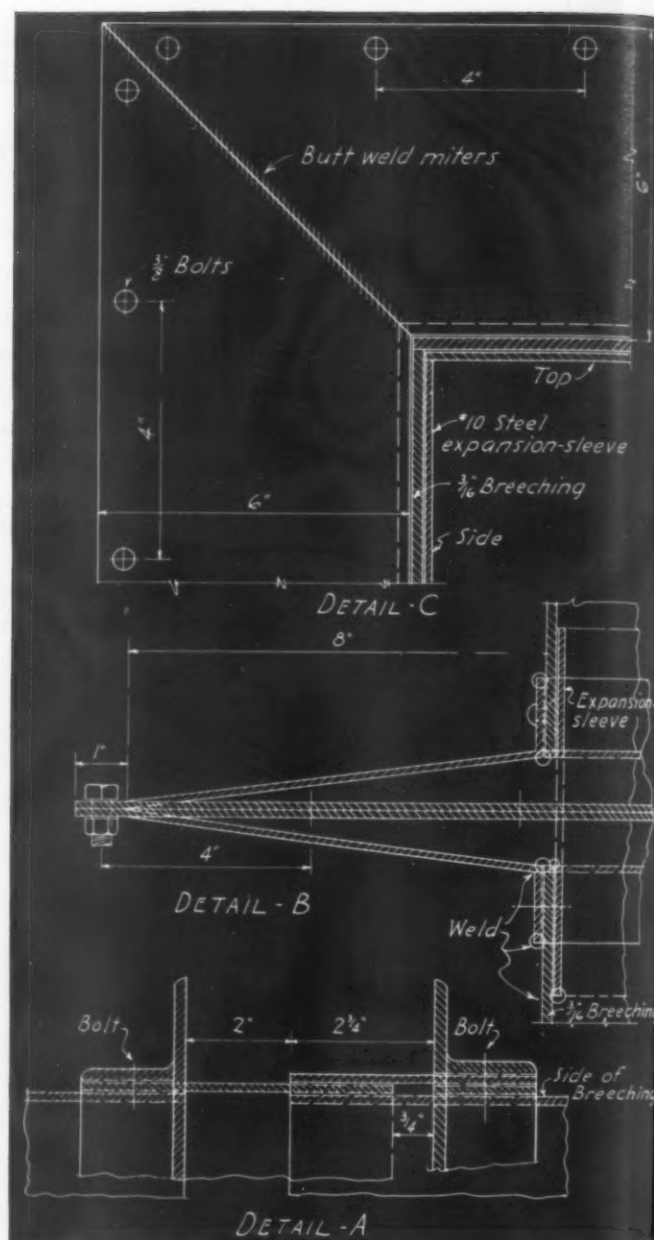
Type "B" expansion joint, is in the form of a "V" or single bellows member, with the flanged base attached to both sections of the breeching. A sleeve of sliding fit, and about seven inches long is provided inside the breeching. One end of this sleeve is attached to one section of the breeching, the other end is free to move in the opposite section. A similar sleeve forms part of Type "C" expansion joint, which is in the form of a section of an accordion, by which name it is called.

This type of expansion joint, as the detail indicates, consists of two "V" or bellows shaped members which are bolted to 3/8 in. plate flanges, secured to each section of the breeching.

The sections on both sides of the expansion joint should be well supported, so that the expansion sleeve does not bind, but is free to move, as the breeching expands and contracts.

Drawings show design and dimensions of a section of each type of expansion joint, which is continuous around the breeching.

Types "B" and "C" joints require the sleeve section inside in addition to the bellows or accordion sections, in order that these expansion members will

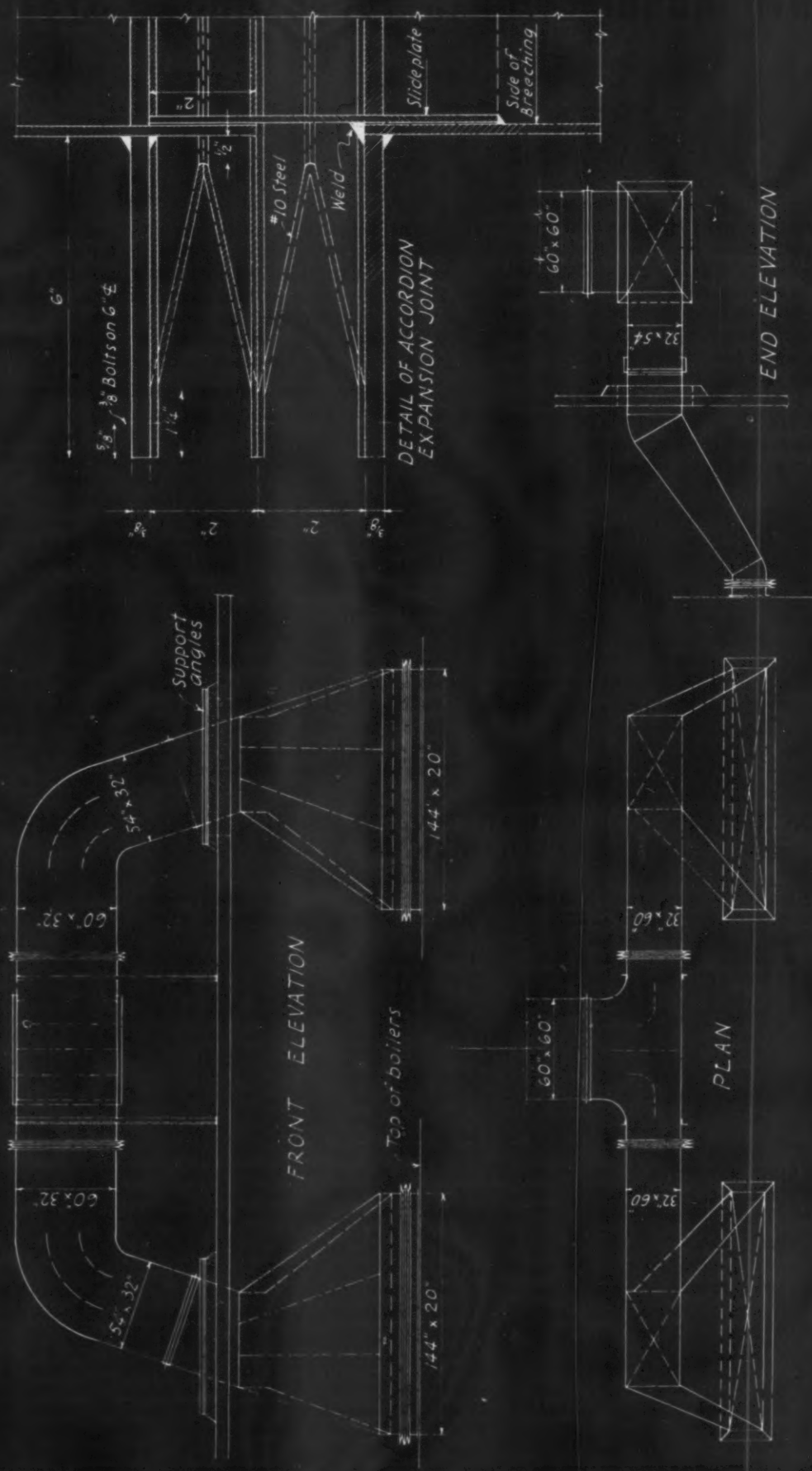


Detail "B" shows a Type "B" accordion joint using a single bellows. Text explains construction. Detail "A" shows a Type "A" expansion joint which is a "sleeve" in which a single plate slides. This is suited to small breechings. Detail "C" shows expansion joint miters.

not become filled with the soot and cinder deposit in the breeching.

As indicated on the drawings, the various parts may be assembled by means of welds, rivets or bolts, or a combination of all three methods. Before deciding this point, it would be well to consider whether the sections of the breeching are to be shipped knocked down; what facilities are available at the job site to weld; and the relative position of the breeching with walls, boilers, etc., to determine that there may be space enough to complete the installation, as planned. The type "C" accordion joint can be constructed by securing the 3/8 in. plates to the expansion sections of the breeching by means of angles, in place of welding.

All outside members of each type of expansion joint are mitered and butt welded.



Plan and elevation of a typical breeching through which passes high temperature gases. To compensate for contraction and expansion in the breeching metal, joints must be provided and constructed so the joint takes the movement. The upper, right detail shows a "Type C" expansion joint sometimes called an "accordion" because of the double V or bellows sections. This Type "C" joint is suited to very large breechings.



# Approximate Requirements for Exhaust Systems

By H. M. Nichols

Manager, Dust Control Dept., B. F. Sturtevant Co.

**T**HE exact computation of the elements of an exhaust system for grinding wheels, woodworking machines and similar applications is quite an elaborate and time consuming process. The accompanying table will be found useful in saving time and effort in arriving at the approximate requirements for an average exhaust system of the type where the machines are hooded and the dust or refuse is picked up at the hoods by air flow and carried through a system of piping, fan, and finally delivered to a cyclone collector.

This tabulated data applies to layout where the machines are grouped reasonably close together, and also where there are no unusually long or small diameter branches, or excessively long suction or discharge mains, and where the cyclone collector is of ample size and of standard design. Usually a cyclone of standard design with inlet area equal to the area of the discharge main will be sufficient.

The basis of this data is the assumption that the resistance of the exhaust system is such that it will require a fan developing a static pressure equivalent to  $2\frac{1}{2}$  times the suction at the hoods, that the fan efficiency is approximately 60 per cent, and that the average coefficient of entrance at the hoods is approximately 70 per cent. For the usual job to cover contingencies and possible future additions, the motor would be powered at about 15 to 25 per cent over the

net horsepower listed in the table.

The term "load area" has reference to the sum of the total square inches of the throat openings at the hood connections. Suctions given are the suction in inches of water at the throat of the hoods and the velocities listed are the velocities in the suction and discharge mains which are sized at 25 per cent greater area than the connected load area.

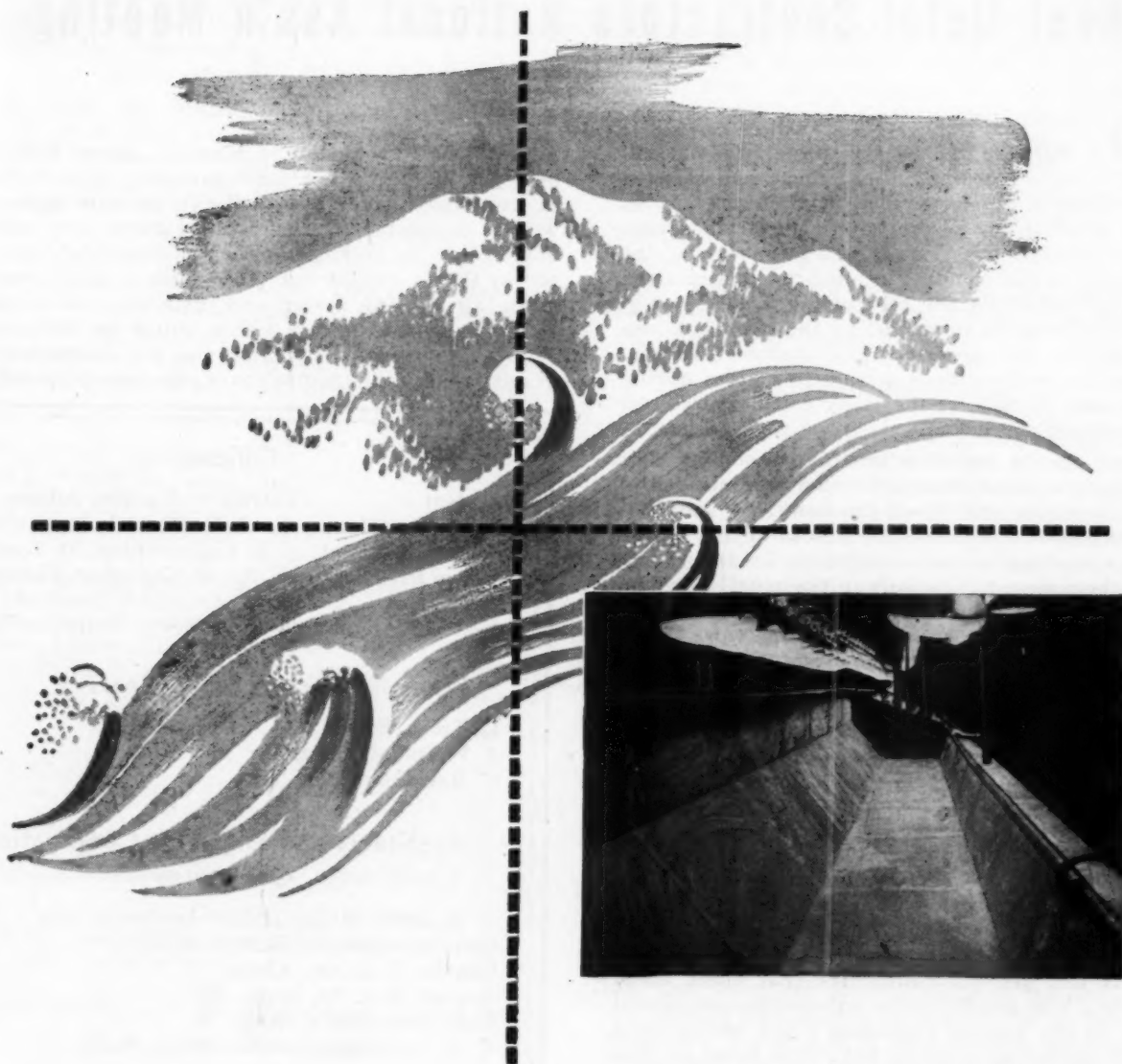
The suction main should gradually increase in size, starting at the far end, according to the rule that at all points the area of the main should be approximately 25 per cent greater than the total connected load area up to the point under consideration. It is permissible to vary from this rule sufficiently to obtain even pipe sizes and also the mains and sub-mains should not appreciably exceed 25 per cent oversize in the various sections, especially at the lower suction, as otherwise the velocities may be reduced to such an extent that material will be dropped out of the air stream.

If there is additional resistance created by unusually small diameter branches or long runs of pipe, the air volumes would still remain the same, but there would be an increase in the fan static pressure and horsepower to compensate for the additional resistance created by these conditions.

## PERFORMANCE DATA FOR EXHAUST SYSTEMS OF AVERAGE COMPACT PROPORTIONS

Diam. of Main in Ins.	Load Area in sq. ins.	2" Hood Suction Main Vel. 3170			2½" Hood Suction Main Vel. 3540			3" Hood Suction Main Vel. 3880			3½" Hood Suction Main Vel. 4190			4" Hood Suction Main Vel. 4480		
		C.F.M.	Fan static	H.P.	C.F.M.	Fan static	H.P.	C.F.M.	Fan static	H.P.	C.F.M.	Fan static	H.P.	C.F.M.	Fan static	H.P.
4	10	277	5	0.37	310	6.25	0.51	340	7.5	0.67	365	8.75	0.85	390	10.	1.03
4½	13	350	5	0.46	390	6.25	0.64	428	7.5	0.85	460	8.75	1.06	495	10.	1.30
5	16	430	5	0.56	480	6.25	0.79	530	7.5	1.05	570	8.75	1.31	610	10.	1.60
5½	19	514	5	0.68	573	6.25	0.94	640	7.5	1.26	690	8.75	1.59	740	10.	1.95
6	23	619	5	0.81	690	6.25	1.13	755	7.5	1.50	820	8.75	1.88	870	10.	2.28
7	31	850	5	1.11	946	6.25	1.55	1,004	7.5	2.00	1,120	8.75	2.58	1,200	10.	3.15
8	40	1,110	5	1.45	1,245	6.25	2.05	1,355	7.5	2.67	1,470	8.75	3.38	1,575	10.	4.13
9	51	1,405	5	1.84	1,575	6.25	2.57	1,715	7.5	3.38	1,860	8.75	4.30	1,980	10.	5.20
10	63	1,730	5	2.27	1,950	6.25	3.20	2,120	7.5	4.20	2,295	8.75	5.28	2,450	10.	6.45
11	76	2,100	5	2.75	2,340	6.25	3.83	2,560	7.5	5.10	2,770	8.75	6.40	2,960	10.	7.80
12	91	2,500	5	3.28	2,780	6.25	4.55	3,050	7.5	6.02	3,300	8.75	7.60	3,540	10.	9.30
13	106	2,920	5	3.84	3,260	6.25	5.35	3,575	7.5	7.08	3,860	8.75	8.90	4,130	10.	10.80
14	123	3,380	5	4.43	3,780	6.25	6.20	4,140	7.5	8.18	4,500	8.75	10.30	4,780	10.	12.50
15	141	3,900	5	5.10	4,340	6.25	7.12	4,760	7.5	9.43	5,340	8.75	12.20	5,500	10.	14.40
16	160	4,425	5	5.82	4,940	6.25	8.12	5,400	7.5	10.65	5,900	8.75	13.55	6,250	10.	16.40
17	183	5,000	5	6.55	5,600	6.25	9.18	6,130	7.5	12.10	6,650	8.75	15.25	7,050	10.	18.50
18	203	5,600	5	7.40	6,250	6.25	10.10	6,850	7.5	13.50	7,530	8.75	17.30	7,900	10.	20.70
19	226	6,300	5	8.25	7,050	6.25	11.50	7,700	7.5	15.20	8,350	8.75	19.10	8,900	10.	23.30
20	250	6,950	5	9.10	7,775	6.25	12.70	8,500	7.5	16.80	9,200	8.75	21.10	9,820	10.	25.80
21	278	7,740	5	10.15	8,650	6.25	14.10	9,500	7.5	18.80	10,250	8.75	23.50	10,480	10.	27.50
22	304	8,500	5	11.10	9,450	6.25	15.50	10,350	7.5	20.40	11,200	8.75	25.60	12,000	10.	31.50
23	332	9,240	5	12.10	10,325	6.25	16.90	11,300	7.5	22.30	12,250	8.75	28.20	13,000	10.	34.00
24	362	10,050	5	13.20	11,250	6.25	18.50	12,300	7.5	24.30	13,350	8.75	30.55	14,500	10.	38.20
25	392	10,900	5	14.30	12,200	6.25	20.00	13,400	7.5	26.50	14,450	8.75	33.40	15,400	10.	40.80
26	424	11,750	5	15.40	13,150	6.25	21.50	14,400	7.5	28.50	15,600	8.75	36.00	16,600	10.	43.70

The area of main is taken to be 25 per cent greater than the area of the branches which it serves. The average coefficient of orifice at the hoods has been assumed as 70 per cent and with a compact system it has been assumed that the fan static will be  $2\frac{1}{2}$  times the hood suction.



## It was like water running uphill...

How could a huge copper box gutter, with no provision for expansion and contraction, give perfect service for 70 years? Such a gutter actually exists. Yet all experienced sheet metal men, including ourselves, thought of it much as we would of water running uphill. It seemed contrary to Nature...until Revere's sheet metal research supplied the explanation, not only for the surprising service of this gutter, but for the disappointing service of certain others.

In the Revere Research Laboratory we duplicated the 70-year old installation, and subjected it to successive cycles of heat and cold. We found that the heavy-gauge cold-rolled copper used had enough columnar strength not to buckle when it expanded. Instead, it merely flexed or bowed. No failure occurred. When light-gauge copper was used, it buckled — and promptly failed. Nor did the presence of expansion joints, when tried, alter the final result.

From this and other Revere research has come the principle of columnar strength as applied to sheet copper

construction. From that principle Revere has worked out new methods that reduce this type of construction to a matter of engineering design. These will be described and illustrated in a booklet now being prepared. Upon request we will place your name on our list to receive a complimentary copy when issued. Write the Revere Executive Offices. Revere materials are handled by Revere Distributors everywhere. For help in difficult problems, call on the Revere Technical Advisory Service, Architectural.

# REVERE

**COPPER AND BRASS INCORPORATED**

*Founded by Paul Revere in 1801*

Executive Offices: 230 Park Ave., New York 17, N. Y.

# Sheet Metal Contractors National Ass'n Meeting

ON April 29 and 30 and May 1, the officers, board of directors, committee chairmen, and selected delegates from state and local associations met in St. Louis to hear reports of progress made by the Sheet Metal Contractors' National Association since the April, 1944, annual convention, and to program the association's activities for the coming year. As evidenced in the reports submitted by the president, secretary, and the various committee chairmen, the national association has made splendid progress during the past year in spite of the many complex problems which confront our industry.

The new officers and directors for the coming year and the various committees appointed or continued in office to formulate and direct the numerous activities of the association are covered by groups in this report. Since this meeting was not a regularly conducted convention, there were no speakers in the usual sense and the full time was devoted to presentation of reports and discussions of future activities. The work which has been accomplished and the program to be followed, as set up by committee groups, may be briefly described as follows:

## Architects-Engineers Committee

"The Architects and Engineers Cooperation Committee," comprising members as indicated in this report, was responsible during the past year for the formulation of a resolution condemning bid-peddling as a practice of general contractors. As described in the May, 1944, AA report on the first national convention, the purpose of this resolution was to suggest to architects and general contractors that sheet metal and roofing bids submitted by sub-contractors should be read at the general contractor's bid letting as a means of preventing properly bid prices being peddled among sub-contractors to obtain the lowest possible sub-contract price. This resolution was prepared at the October 13 and 14, 1944, board of directors' meeting and since that time has been presented to the American Institute of Architects and the national office of the Associated General Contractors. In addition, member groups of the National Association have presented this resolution to local A. I. A. and A. G. C. officers. The committee reported that the resolution has met with excellent acceptance and that with continued pressure to observe the resolution, it may be hoped that eventually bid peddling practices will be stopped. The committee was authorized to continue the work as started and to continue exerting pressure on local and state A. I. A. and A. G. C. offices and on architects and general contractors as bids are filed.

## Codes-Ordinances Committee

The Committee on Heating Codes and Local Ordinances will continue to operate as a reference source for communities, bodies of citizens, or groups of contractors attempting to formulate and install warm air heating codes in city ordinances. The committee reported that the new ordinance form of the "New Code and Manual for the Design and Installation of Warm Air, Winter Air Conditioning Systems," which has been prepared by the National Warm Air Heating and Air Conditioning Association as a part of Section

Seven (The New Code and Manual), seems to be the best possible ordinance form available. The committee reported further that in the future this ordinance will be suggested to cover forced warm air heating and winter air conditioning. The committee also reported that a similar ordinance form to cover gravity warm air heating design and installation is in preparation and is expected within thirty to sixty days. This gravity ordinance form and the accompanying gravity application manual have also been prepared by

## Officers

President.....Patrick S. Varden, Albany, N. Y.  
1st Vice President.....J. E. Merrick, Louisville, Ky.  
2nd Vice President....B. Kolbensschlag, St. Louis, Mo.  
3rd Vice President.....R. Guenther, Chicago, Ill.  
Treasurer.....C. M. Gundlach, Sandusky, Ohio  
Sgt.-at-Arms.....H. Selch, Indianapolis, Ind.

## Directors for 3 Years

L. Trost, Erie, Pa.  
J. Walter, Ottawa, Ill.  
C. Ruebeck, Waco, Texas.

## Architects and Engineers Cooperation Committee

J. E. Merrick, Chairman, Louisville, Ky.  
Clarence J. Meyer, Buffalo, N. Y.  
Charles R. Joyce, Albany, N. Y.  
August Beck, St. Louis, Mo.  
Rudy Guenther, Chicago, Ill.  
R. E. Lawrence, New Brighton, Pa.

## Committee on Heating Codes and Local Ordinances

C. Peterson, Chairman, Minneapolis, Minn.  
George Kalvog, Chicago, Ill.

## Warm Air Dealer Education and Heating Design Committee

B. Kolbensschlag, Chairman, St. Louis, Mo.  
Paul Krueger, Madison, Wis.

the National Warm Air Heating and Air Conditioning Association.

The National Secretary of the Sheet Metal Contractors National Association will have available copies of these two heating ordinances and the accompanying manuals so that members of the committee may obtain copies from the national office. The committee recommends that these two ordinance forms be suggested in place of the different ordinance forms now in existence in cities like Minneapolis, Toledo, Detroit, and others, because these existing ordinances differ in form from the very simple to very complex, and it is difficult for a city governing body to select the proper ordinance form. The committee also recom-



mended that every member of the National Association obtain copies of these codes as soon as possible and study them thoroughly.

#### Dealer Education Committee

The Warm Air Dealer Education and Heating Design Committee has not done a great deal during the past year because the committee was authorized at the October meeting to wait until it can be determined just what sort of an organization the new dealer's division of the National Warm Air Heating and Air Conditioning Association will be and what activities this dealer division will follow. This committee was charged with the duty of studying and executing the code set up by the National Warm Air Heating and Air Conditioning Association and to follow closely the educational program promoted by the controls manu-

Harvey Orton, Barberton, Ohio.  
Harry L. Fitch, Rochester, N. Y.  
E. Ludwig, Ottawa, Ill.  
L. F. Kent, Atlanta, Ga.

#### Membership and Publicity Committee

Harvey Orton, Chairman, Barberton, Ohio.  
E. Pluth, Lincoln, Ill.  
Paul L. Biersach, Milwaukee, Wis.  
J. E. Merrick, Louisville, Ky.  
N. J. Biddle, Detroit, Mich.  
Homer Selch, Indianapolis, Ind.  
J. D. Wilder.  
E. Carter.  
R. Mahoney.

#### Apprenticeship Training Committee

Frank Kramer, Chairman, Milwaukee, Wis.  
Additional members on this committee will be appointed later.

#### Architectural and General Sheet Metal Construction Standards

J. Walter, Chairman Ottawa, Ill.  
J. Victor King, Sanford, N. C.  
Wm. Schmitt, Rochester, N. Y.  
Louis E. Dreihobl, Chicago, Ill.  
Edward M. Pluth, Lincoln, Ill.  
Wm. J. Metzger, Kalamazoo, Mich.  
R. H. Dose, St. Paul, Minn.  
Alfred A. Kellogg, Albany, N. Y.

Ventilating and Blow Piping Standards Committee and Labor Relations Committee are not complete. Members' names on these committees will be released later.

facturers and the National Warm Air Heating and Air Conditioning Association and by various heating equipment manufacturers or local associations as these schools are conducted during the coming year. The committee will make available to members all necessary data on these schools and educational programs.

#### Membership-Publicity Committee

The Membership and Publicity Committee was reorganized to include contractor members as well as the representatives of the three trade papers. This enlarged committee was charged with the task of establishing a program and suggesting means whereby an additional 500 new members may be obtained be-

fore the next national convention in 1946. It was particularly recommended that a program be established to attract to membership large contractors in metropolitan areas. This committee was also charged with the duty of continuing an enlarged publicity program under which all members of the National Association and, if possible, a selected list of prospective members shall receive, as frequently as possible during the coming year, suitable publicity pointing out association accomplishments and expectations. This committee will hold a meeting in Detroit on May 22nd, at which time it is hoped that a complete publicity and membership program for the coming year will be discussed and set in operation.

#### Apprenticeship Committee

The Apprenticeship Training Committee has prepared and distributed to members a suggested "National Apprenticeship Program for the Sheet Metal Industry" which embraces within its recommendations all the necessary and suggested apprenticeship programs of the Federal Government, various State governments, and organized labor. This complete program was published on page 61 and 62 of the March, 1945 AMERICAN ARTISAN. The committee was charged with the duty of continuing the work of formulating complete plans for use in apprenticeship training courses for all members of the national association throughout the country. The committee is to work closely with the War Manpower Commission, the American Legion, and organized labor, to the end that, as soon as possible, a sound and workable apprenticeship training program may be set in operation throughout the country. The committee reported that there is at present and will continue to be for some time a great scarcity of apprentices and that following the war the situation may become serious in view of the fact that many journeymen are now ending their working life, and there are coming up from the industry at the present time almost no apprentices to take these mechanics' places. As a part of this apprenticeship committee's report, the convention was addressed by M. M. Hanson of the Federal Apprenticeship Training Service, from the Madison, Wis., office. His remarks are reported elsewhere.

#### Sheet Metal Standards Committee

The Architectural and General Sheet Metal Construction Standards Committee was charged with the task of collecting technical data on new metals and their uses in order that information on these new materials and practices may be broadcast to association members. It was particularly requested that this committee give some attention and thought to practices our industry may adopt to offset the inroads of structural glass store fronts and synthetic materials for store fronts and building ornamentation. The committee will also investigate the possibilities of supplying architects and general contractors with technical information on gauges of materials which will withstand weather and stress and to investigate the possibility of supplying to architects and builders information on practical designing which will make sheet metal work and roofing fulfill the inherent long life of the materials used.

Two very important committees were not appointed at the meeting. These two committees are Ventilation and Blowpiping Standards Committee and the Labor Relations Committee. As President Varden said, the Labor Relations Committee is now and will be in the

postwar period one of the most important committees of the association. It is through this committee that the many problems of labor relations confronting employers must pass and it is hoped that a very strong and working committee can be set up to handle these important problems. As soon as possible, certain prospective members of this committee will be contacted and means will be discussed whereby they can handle the mass of detail which undoubtedly will confront the committee and the industry after the war.

The Ventilating and Blowpiping Standards Committee faces the problem of correlating and separating from the wide mass of engineering data now used by individual contractors certain basic standards of design and installation which all the industry can adopt with safety. There are no established standards at the present time, excepting standards which have grown up with the blowpiping industry and which may quite likely be subject to radical change in view of improved practices and improved materials and equipment.

Within the last two weeks the National Association and the industry in general have lost, by death, two of the industry's and the association's most prominent members. Resolutions of condolence were passed by the meeting on the death of George Harms (see obituary in this issue of AMERICAN ARTISAN) and Frank Sink, president of the Indiana association and one of the largest contractors in Indianapolis.

#### Progress Report

President Varden, in opening the meeting and throughout the various sessions, presented numerous interesting examples of association accomplishments during the past year and cited some of the plans which are necessary in the coming months. President Varden and Secretary Meyer described the mailing of six letters at intervals to 6,000 prospective members. As a result of this mailing campaign, there are now in the association more than 650 members and since the last annual convention in Chicago in April, 1944, more than \$10,000 in dues have been collected. The bank balance, after deductions for association expenses and the membership campaign, is still very substantial and permits the association to pursue almost any reasonable plan in the coming year.

President Varden pointed out that in addition to obtaining many memberships, these letters have also resulted in numerous expressions of wide interest in the association and its activities received from members and prospective members all over the United States. President Varden suggested that local and state committees should capitalize on this interest, and since membership in the National Association is permissible only when the members join the local and state association for his area when such association exists, both local and state associations should, in the coming year, attempt to increase their membership along with membership in the national.

President Varden reported that the resolution on bid peddling to AIA and AGC has been discussed by architects and contractors from coast to coast, and AIA has sent several letters to local AIA groups, suggesting that this bid peddling resolution be adopted and supported. Probably, he said, this bid peddling resolution will gain increasing support from AIA and AGC during the coming year. President Varden reported also that the New York State Employers Association has discussed this bid peddling resolution in considerable detail and has adopted the resolution in principle and referred the resolution to the executive

committee composed of general and sub-contractors for further discussion and possible adoption. In addition, a code of bid peddling ethics is under consideration for the State of New York.

According to President Varden, the National Association apprenticeship plan referred to previously has been submitted to many branches of the construction industry in the past several months and has secured exceptional recognition. As to the need for further work on apprenticeship training, President Varden cited the fact that in all the U. S. building trade there are at present something more than 5,000,000 mechanics and only 600,000 apprentices. Breaking this down for the sheet metal industry shows approximately 81,000 sheet metal mechanics with fewer than 9,000 apprentices. The problem is further aggravated by the fact that we have today 20 per cent fewer all around sheet metal mechanics than are absolutely essential, and out of the total perhaps less than 12 per cent might be listed as really skilled layout and bench men. Sixty per cent of the mechanics now in our industry need additional training to become all around mechanics.

#### Labor Discussions

Led by President Varden, much interesting discussion developed regarding CIO and AFL. It seems from reports received by the association that CIO is establishing itself soundly in industries employing sheet metal mechanics, but AFL is still attempting to place maintenance men employed by contractors in industry as maintenance men. This situation may become serious in the postwar era and the association should be prepared to take any necessary action. Another interesting discussion centered around the growing practice in large communities of firms specializing in one particular branch of our industry activity, such as ventilation, fume removal, dust collection, or air conditioning. It seemed to be the consensus of members that in the postwar era it will become increasingly difficult for any one mechanic to be a specialist in all these various activities and some thought should be given to the possibility of setting up certain "standards of ability" covering the different types of work our mechanics do.

It was reported that the AFL is now establishing "construction training," a plan which will train workers (not apprentices) who wish to transfer from plant maintenance sheet metal work to ventilation or dust collecting, etc. This plan seems to have considerable merit and may be one answer for the contractor who wishes to obtain or train the best possible mechanics for a specialized line of work. It was also reported that AFL is engaged in an organized campaign to place AFL mechanics in large plants in industry as a precaution against further inroads by CIO.

#### Apprenticeship Training

M. M. Hanson of the Federal Apprentice Training Program, Wisconsin office, reported that most of the apprentices, as we used to know them, are today in the armed forces or are now carrying cards as journeymen. It is a long, slow, difficult job, said Mr. Hanson, to get labor and management together on any basis for apprentice training. Ten years of work by the Federal Apprenticeship Commission shows 71 joint apprenticeship committees now operating in 25 states. The goal is 800 joint committees. The Chicago Joint

(Continued on page 135)



# New York's 1945 War Conference

At the 1945 War Conference of the New York State Sheet Metal, Roofing & Air Conditioning Contractors Association, Inc.—the 22nd annual—held on March 20 and 21 at the Hotel Sheraton, Rochester, there was a very interesting talk on general insurance, given by Roy A. Duffus, Chairman of the Casualty Committee, National Association of Insurance Agents. His talk covered various forms of insurance, and he suggested that everyone cultivate the acquaintance of some competent insurance man, because he can be a good friend in the time of need. He stressed the thought of having all policies surveyed at least once a year, because new hazards and new conditions continually arise in the industry.

## 1945 Officers

The Nominating Committee—William Schmitt, Chairman—recommended that the president for the coming year, through the secretary, appoint a nominating committee two or three months before the convention and present each with a list of members.

The Nominating Committee then submitted the following slate, which was unanimously elected:

President—Charles R. Joyce, Albany.  
First Vice-President—C. Williams, Rochester.  
Second Vice-President—Joe Stiglmeier, Buffalo.  
Secretary—Clarence J. Meyer, Buffalo.  
Treasurer—William C. Kirkpatrick, Buffalo.  
Immediate Past President—Patrick S. Varden.  
Directors to 1946—Harry Fitch and James A. Heaphy, of Rochester and Syracuse, respectively.  
Directors to 1947—J. Townsend, Westchester and James Keays, Albany.  
Directors to 1948—H. A. Daniel, Newburgh and A. C. Hall, Elmira.

Past President Varden welcomed President Joyce to the chair, following which the convention unanimously elected President Joyce a delegate to attend the National convention at St. Louis.

Past President Varden called attention to ODT restrictions and war ruling on carrying on a meeting, pointing out that it will be necessary to send out proxies to all the members of the National Association, who in turn should fill in and sign and return to either the delegate or the association secretary to enable the delegate to have the proper voting power.

## Indoor Climate

Walter Voisinnet, President of the Indoor Climate Institute of Western New York, spoke on "Air Conditioning the Home of the Future." He said that going back to 1911 various engineers and scientists published important data on work they had been doing, and this created a demand for industrial air conditioning. Creation of better comfort conditions for humans evolved from this early industrial work. He stressed the point that a fully insulated house is necessary to derive the maximum benefit from winter air conditioning. He said it is very important in the over-all problem of heating a residence, since you cannot heat all outdoors, nor be comfortable with any type of heating system if the windows leak badly and the walls are cold.

He further stated that your clients will want control of temperature and zoning if the home is large—

cleanliness and automatic heat to get the maximum comfort—good appearance and safe equipment properly installed and located.

## Installation Costs

Allan Douglas of the National Gypsum Company spoke on insulation and followed along the same lines as Mr. Voisinnet. In his talk, he said that insulation costs little in the long run or overall average. A person building a new home on a 20-year loan of \$5,000 mortgage pays \$40 a month, or \$8 per thousand, and by increasing the payments only \$2.50 per month over the life of the loan, he can install complete rock wool insulation, storm sash, and weather stripping. He can also have a heating plant designed for a fully insulated house that will cost \$100 less in the initial layout than an uninsulated house. He further stated that all homes should be insulated of necessity because only 80 per cent of the coal needed for next winter will be available according to the Solid Fuel Administration in Washington. He said that one ton of rock wool in a home will save three tons of coal or 450 gallons of fuel oil.

## Coal and By-Products

E. O. Rhodes, Manager of the Development Department of the Koppers Company, was the next speaker. He talked about products of coal tar in a 20 minute rapid-fire speech using chemical terms on coal and by-products that left the audience gasping for breath.

Mr. Rhodes related how by-product coke ovens—usually consisting of 50 chambers in a battery of 18 niches 12x42x10 feet—are charged and baked indirectly. After the process, the coke is pushed from the oven, the by-products or gas and fumes that come off make everything from gas for heating your home, to a good macadam road for your new plastic car—while your lady friend sits beside you wearing make-up and perfume from the same source, and you at your leisure take doses of Vitamin "K" for a blood deficiency (in case your blood fails to clot after you cut yourself while shaving) derived from the same by-products.

## Group Insurance

A report was made on Group No. 194 Compensation Insurance by William Haines, President of Laverack & Haines, Inc., Group Managers. His report showed 60 members last year and 79 as of March 20, an increase of 30 per cent. He stated that an average of 32 per cent has been saved by members of the group within the last three years, and that the group is the most successful that they have ever managed in New York State.

## Varden Opens Business Session

At the Wednesday afternoon business meeting, the roll call by President Patrick S. Varden was answered by 32 members, including Secretary Clarence Meyer and President Varden.

President Varden called upon all members to do a selling job in building up the association. There are 775 shops in the State of New York, he said, and a little effort on the part of members should build up

(Continued on page 137)



# ASSOCIATION ACTIVITIES



## New York

The "Institute Ticker" published monthly by Roofing and Sheet Metal Crafts Institute, Inc., states that work on the Group Insurance Plan is progressing satisfactorily. President Lawrence C. Corvi appointed an executive committee at the March 14 meeting for the purpose of investigating the details connected with the plan and to form a Trade Group Insurance Association, which will supervise its activities.

Headed by Louis Moskowitz, the committee consists of Tom Wynne, Al Neuscheler, Irving Popik and Irving Katz. This group will also adopt the by-laws submitted by the State. Eugene L. Packer and P. Marks were asked to serve on the management committee, which would collaborate with the insurance representative. Members will be contacted individually and open forums will be held.

As a service to the trade, the Institute is considering a proposal that other roofing and sheet metal shops be invited to participate.

Treasurer Irving Koppelson and Mrs. Koppelson were hosts during the social part of the March 14 meeting.

The Institute welcomes Charles E. Strauss as a new member. Located at 391 E. 149th Street, New York, the firm specializes in shingle roofing, siding for the trade only, etc.

## Florida

President Fred A. Falkner of The Roofing & Sheet Metal Contractors Association of Florida, addresses a letter to Fellow Members in the April 15 issue of "The Florida Roofer" stating that he believes it is time for the association to get together and make some plans for the post-war activities. Mr. Falkner believes there are a great many things to be considered and invites members to make their plans to attend the May 18 and 19 meeting which is to be confined strictly to business. Members are invited to make suggestions as to strengthening the organization.

Membership fee (raised to \$25 at the last convention) is to be considered and members are invited to write their suggestions, that the matter may be settled to the satisfaction of all. Should there be a sliding scale? What should an associate pay?

National affiliation is being considered.

Wage scales and OPA price regulation will be discussed. Fred A. Falkner, P. O. Box 673, Orlando.

## Cook County, Illinois

The Sheet Metal Contractors Association of Cook County held their regular April meeting at 6:00 p. m., Tuesday, April 17, at the Builder's Club at 228 North La Salle Street, Chicago. This was a dinner meeting and was well attended.

James Mansfield & Sons Company, Inc., 1645 South Pulaski Road, was the new member introduced at this meeting.

Reports were received from all committee chairmen and routine business handled with adjournment at 9 p. m.

Our next meeting will be at 12:30 p. m., May 16, at the Builders Club.

Wm. J. Perkinson, President.

## Lake County, Indiana

The Lake County Sheet Metal & Warm Air Heating Contractors Association has been incorporated under the laws of the State of Indiana and the officers are as follows:

John Olson.....	President
John Novotny.....	Vice-President
Ed Bennington.....	Recording Secretary
H. Shanker.....	Treasurer
John Wessbecker.....	Sergeant-at-Arms

The main purpose of the organization is for the good and welfare of the trade and also to promote a better understanding between the contractors. We have recently appointed a Code Committee which is working on a warm air heating code to be approved for this entire area.

We will entertain any offers by the men in the supply and equipment business to give talks and demonstrations at our meetings. We meet the first Friday of every month.

Isadore Zweig 1959 Broadway, Gary, Indiana.

## Fox Valley Open House

For the sixth year, the Fox Valley Furnace and Sheet Metal Contractors Association held an annual "get acquainted" party to which salesmen, non-member contractors, jobbers and manufacturers' representatives were invited, April 13, at Carlson's Hall, St. Charles, Illinois.

In the absence of president Jack Stowell, vice president Bill Stevens presided and introduced all of the fifty or more guests who attended. Each guest was asked to contribute a few remarks and to introduce other members of his organization.

No business was transacted—the meeting was social with the perennial Bill Klinky and Don Glossop in charge of beer, sandwiches, and all the trimmings. Everybody had a pleasant evening.

## ICI Elects New Directors

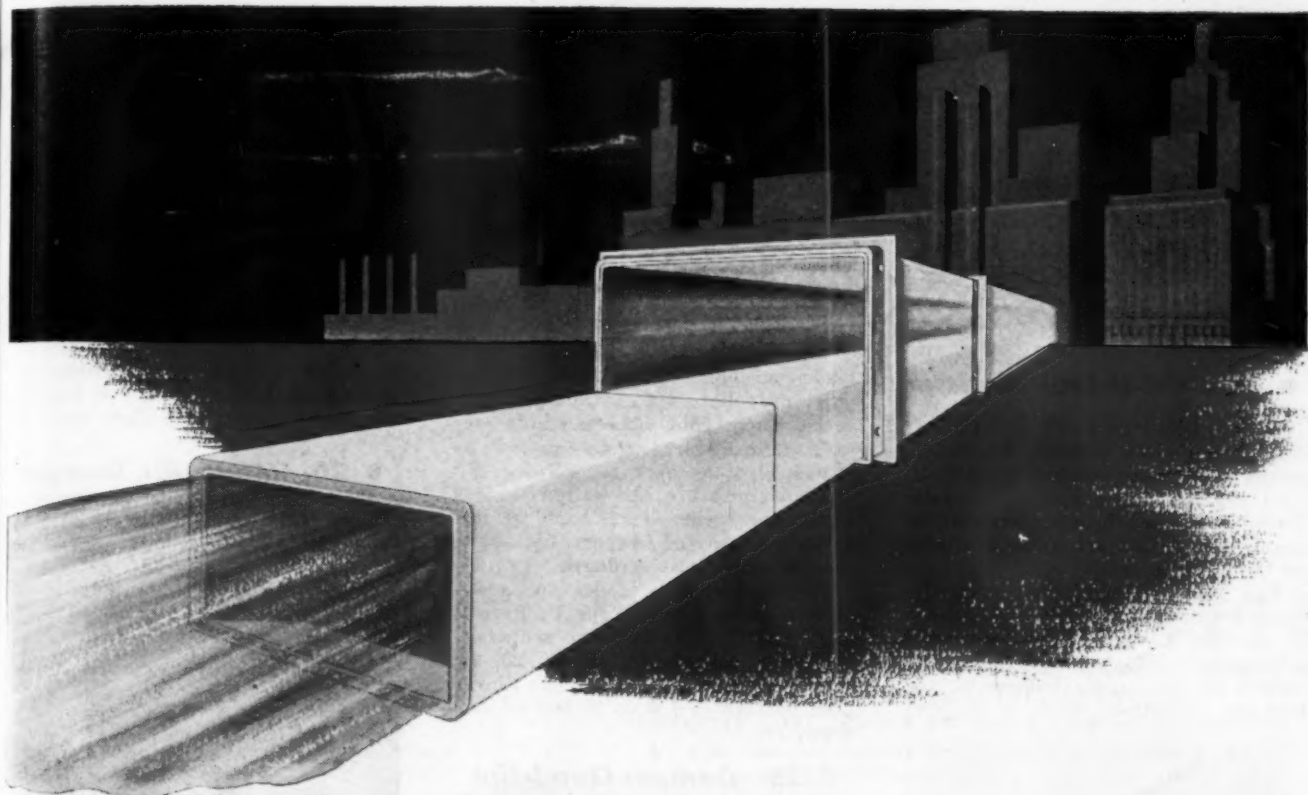
Election of new directors to fill two vacancies on the governing board of Indoor Climate Institute, at the April meeting in Detroit, was announced this week by Paul B. Zimmerman, president.

The new directors are C. A. Olsen, president of the C. A. Olsen Mfg. Co. of Elyria, and president of Henry Furnace Co., Medina, Ohio; and Bruce T. Cunningham, sales executive of Research Products Corp., Madison, Wis.

Mr. Olsen, one of the most progressive men in the warm air business, is the former manager of Fox Furnace Co., division of American Radiator, and past president of the National Warm Air Heating and Air Conditioning Association during the period it carried on its most active research and trade development work. Cunningham is a member of the Postwar Personnel and Training Committee of ICI. The companies represented by the new directors are charter members of the Institute.

## Important Meetings

May 18-19—Roofing & Sheet Metal Contractors Association of Florida. Angelbilt Hotel, Orlando. Fred A. Falkner, President, c/o Falkner, Inc., P. O. Box 673, Orlando, Florida.



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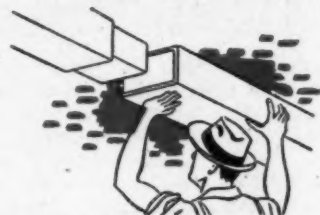
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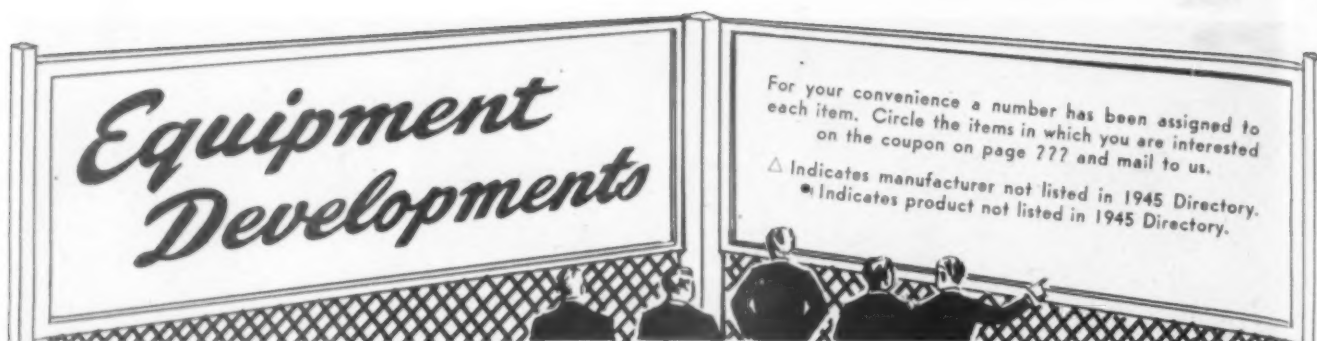
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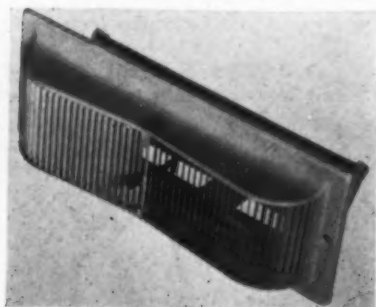
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Expansion Joint • Asbestos Wallboard and Sheathing • Corrugated Asbestos Roofing and Siding • Miami-Carey Bathroom Cabinets and Accessories



## • 26—Vol-U-Trol Register

Minneapolis-Honeywell Regulator Co., 2726 Fourth Avenue, S., Minneapolis 8, plans to market the Vol-U-Trol register for use with domestic forced warm air heating systems as soon as materials are made available by the government.

The Vol-U-Trol is a manually operated air supply register, designed to provide a wide range of easily adjustable diffusion settings and control of air supply volume at the register, together with a manual



shut-off. The unit is designed to insure even distribution of air over the entire face of the register with reduced turbulence and resistance.

The curved extension front, together with the individually adjustable diffusion vanes, permits adjustment so that any shape or room can be blanketed with air regardless of register location.

An operating lever projecting through the center of the register is used to change the amount of opening of the volume control blades, thus placing control of the air supply volume at the register. Because of this feature, the need for balancing dampers in the duct work has been eliminated. An additional feature of the device is an adjustable lock which is mounted so that the register can be closed by means of the operating lever and then be reopened to the previously determined point.

Turning vanes are provided to insure even distribution of air over the register face. The location of the vanes is adjustable so that they can be properly placed to turn the air coming up the riser efficiently.

## △ 27—Victory Fan Blade

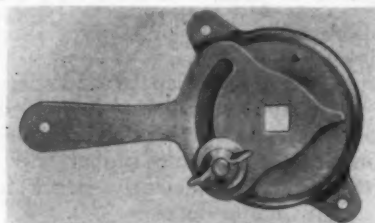
Burden Fan & Blower Company, 8619 W. Third St., Los Angeles, 36, California, offers the victory fan

blade—a plastic fan blade of the quiet propeller type, without priority certification. The blade is stable over wide temperature range—as low as minus 40 or as high as 265 deg. F.; has low moisture absorption—less than 1 per cent; is resistant to corrosive action of vapors; is light weight with great strength.

The Victory fan blades are available in three types—Type F, Type C and Type CL. The first two are available in 8, 10, 12, 14, 16, 18, 20, 22, and 24-inch diameters, and the Clover Leaf pattern in 6, 8, 9, 10 and 12-inch diameters.

## △ 28—Damper Quadrant

Western Air Devices, Inc., 1349 E. Vernon Avenue, Los Angeles, Calif., has just placed on the market a new damper quadrant, designed in a modern pattern for light industry and dwellings. The device comes in one-



quarter and three-eighth inch sizes, plated with rust-resisting cadmium. Features are ease of installation, dependability of operation and ruggedness of construction.

Western Air Devices, Inc., announce that their damper quadrant is available now for immediate shipment. Free sample and descriptive material will be sent on request.

## • 29—Rivet Remover

Topflight Tool Co., Chestnut Ave., Towson 4, Maryland, offers the Topflight Rivet Remover which may be

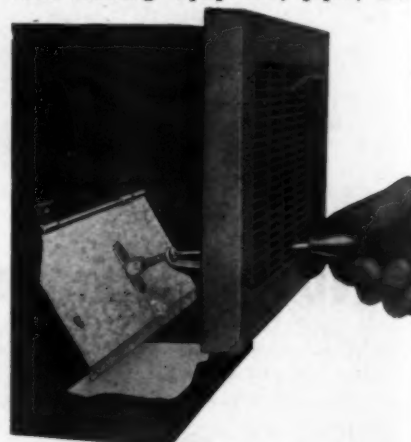


attached to any standard automatic rivet gun. The pulsating action operates the rivet remover. Standard models remove 1/8 and 5/32 rivets, without

distortion of the skin and without enlarging the hole. A two-way bucking bar is furnished with each remover.

## • 30—Mayn Air Damper

The Henry Furnace Company of Medina, Ohio, manufacturers of Moncrief heating equipment, pipes, and



fittings, has acquired the exclusive manufacturing and selling rights to the Mayn Air damper.

Installed in the stack head, the Mayn Air takes the place of dampers customarily placed in basement ducts. Introduced in 1940, these dampers have been installed in thousands of air conditioning systems in all parts of the country, and under the new manufacturing and selling program of Henry Furnace will be available again to the heating trade.

An attractive folder explaining the construction and advantages of Mayn Air dampers is available.

## • 31—Lo-Volt Test Glo

Ideal Commutator Dresser Company, 1084 Park Avenue, Sycamore, Ill., announces a new circuit tester called the "Lo-Volt" Test Glo, intended for testing circuits from 5 to



50 volts. It simplifies the testing of open circuits, burned out fuses, and can be used for indicating the relative value of line voltage.

The incandescent "glow" lamp is protected by a transparent plastic housing. Overall length is only 7 in. It is compact so it can readily be carried in the pocket. Fully insulated test leads are 4 in. long.



# Workability

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**U-S-S PAINTBOND**—A galvanized, Banderized sheet that permits immediate painting and holds paint tighter. U-S-S Dul-Kote, a product with similar properties, available in the South and West.

**U-S-S HOT-ROLLED AND COLD-ROLLED STEEL** to provide the basic advantages of steel, plus maximum economy, in accordance with the needs of each individual job.

**U-S-S STAINLESS AND HEAT-RESISTING STEELS** to assure high resistance to corrosion and heat, and to reduce weight.

**U-S-S VITRENAMEL** — Sheets designed especially for porcelain enameling.

**U-S-S LOW-ALLOY, HIGH-STRENGTH STEELS** to resist corrosion and increase strength-weight ratio.

True to gage, flat, ductile, U-S-S Steel Sheets are an important aid to quality in sheet metal work. Punching, stamping and shearing qualities are easy on dies and cutting tools. Rigid, strong, adaptable to countless requirements, U-S-S Steel Sheets are unsurpassed for workability.

THE inevitable flood of postwar repair and remodeling business—in homes, factories and public buildings—will certainly include a strong demand for sheet metal work. Roofing, gutters, downspouts, air-conditioning ductwork, chimneys, ventilators, chutes and machine guards will be among the most wanted items.

For every one of those jobs you will be able to get the right type of U-S-S Steel Sheets. Look over the various sheet steels listed here and note the special characteristics of each.

Remember, the most complete line of steel sheets put out by any one concern bears the famous U-S-S Symbol. It is your guarantee of top quality, superior workability. And your customer—to whom it is being widely advertised as a symbol of quality—is inclined to feel that your work must be of similar quality.

To help you get all the advantages made possible by advanced shop practice and select the right U-S-S Steel Sheet for each job, we have prepared "The Sheet Metal Worker's Guide." You will find it a helpful, practical handbook. We'll gladly send you a free copy. Just drop us a line today.

## U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco

TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Supply Company, Chicago, Warehouse Distributors

United States Steel Export Company, New York



# UNITED STATES STEEL

# Do You Want Leadership in Oil Heating Sales?

## Here's why you should sign up as a Fluid Heat Dealer NOW

Are you aiming for the top in oil heating sales? Then Fluid Heat has what it takes to help you get there . . . and the completeness of the Fluid Heat line is only part of the story. Here's more:

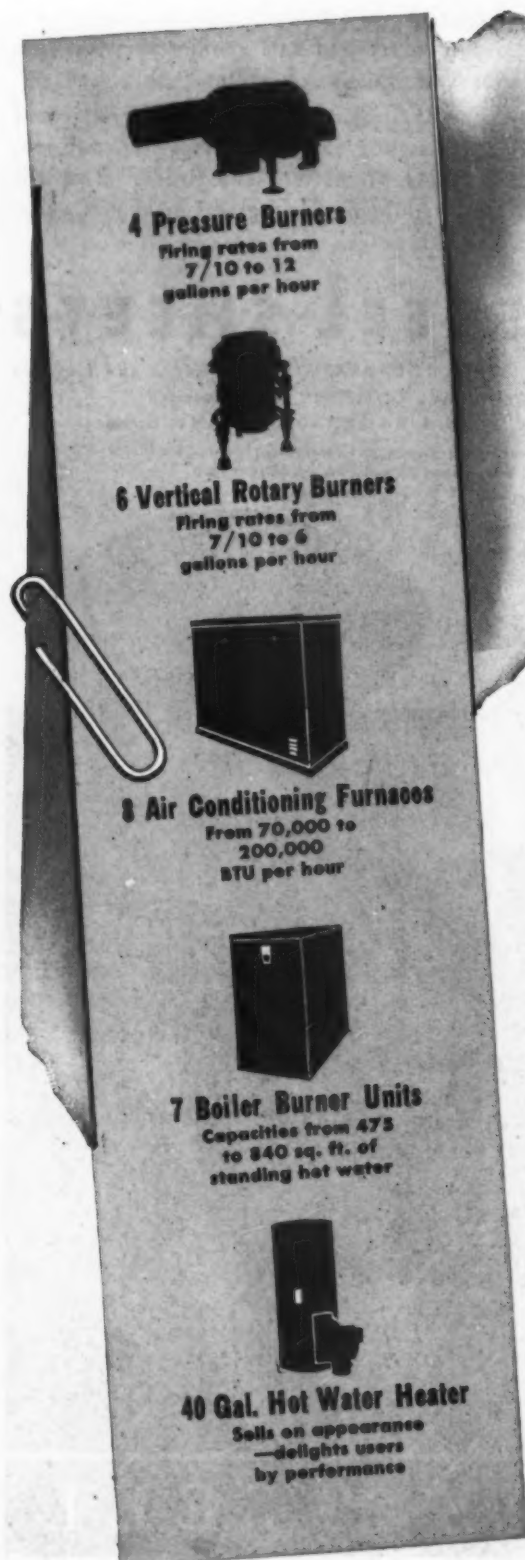
- 1 As a Fluid Heat Dealer, you'll have real consumer acceptance . . . a trademark with a reputation that dates from the beginning of the oil heating industry . . . backed by a nationally known manufacturer whose products have given satisfaction to home owners for more than half a century.
- 2 You'll have behind you a company which has built its oil heating business by helping dealers build theirs. Fluid heat believes in working with dealers as partners in a cooperative, progress-minded effort.
- 3 You'll have the assistance of an active Field Force . . . of experienced Fluid Heat men who can help you on any problem of oil heating installation, operation, service or sales.
- 4 You'll sell equipment that is soundly designed and ruggedly built . . . to reduce service problems to a minimum and build sales through customer satisfaction. Many Fluid Heat Burners are still on the job after 17 to 20 years of use.
- 5 To keep you out in front product-wise, you'll have working for you one of the largest Development Laboratories in the industry . . . from which have come many sales-building Fluid Heat features. More will come from Fluid Heat's successful development of efficient combustion and heat transfer equipment for the Armed Forces.

Fluid Heat is ready to work with you . . . so you'll be all set to profit by the huge postwar market for oil heat. Check the completeness of the Fluid Heat line at the left. Then get complete facts about a Fluid Heat Franchise. No cost. No obligation. Write today to: Fluid Heat Division, Anchor Post Fence Co., 6720 Eastern Ave., Baltimore 24, Maryland.

**fluid heat**  
**PRODUCTS**

*"World's Economy Champion"*

A PRODUCT OF THE ANCHOR POST FENCE COMPANY.  
BALTIMORE, MD., ESTABLISHED 1892



## THE "BAKER'S DOZEN" PRINCIPLE



## Safeguards the Performance of Millions of SUNLIGHT MOTORS

The principle of the "baker's dozen" . . . extra value in design and construction . . . is built into every Sunlight motor. There is no skimping on materials, in quality or quantity. There are no short-cuts in engineering construction. Sunlight motors give "full measure" performance because they receive "full measure" treatment.

Extra protection is built into every Sunlight motor—full-gauge copper wire to cut down heat generation . . . extra power that gives up to three times rated starting capacity . . . extra-heavy coatings of dielectric insulation protecting motor windings . . . diamond-bored cast bronze bearings.

Sunlight motors are **FIRST QUALITY** in design, material and manufacture. Because of this, manufacturers, dealers and users throughout the country respect the name "Sunlight" on an electric motor. To the appliance industry it means better customer acceptance and better performance.

*Packard*  
REG. U.S. PAT. OFF.  
MADE IN U.S.A.

Packard Electric Division, General Motors Corporation, Warren, Ohio  
DEPENDABLE APPLIANCE MOTORS FOR TWENTY- EIGHT YEARS

### SUNLIGHT MOTORS FOR:

AIR COMPRESSORS  
WASHING MACHINES  
POWER-DRIVEN BENCH TOOLS  
IRONERS  
MILK SEPARATORS  
MILKING MACHINES  
FURNACE BLOWERS  
STOKERS  
OIL BURNERS  
WATER PUMPS  
VENTILATORS  
AND MANY  
OTHER APPLICATIONS



BUY MORE BONDS



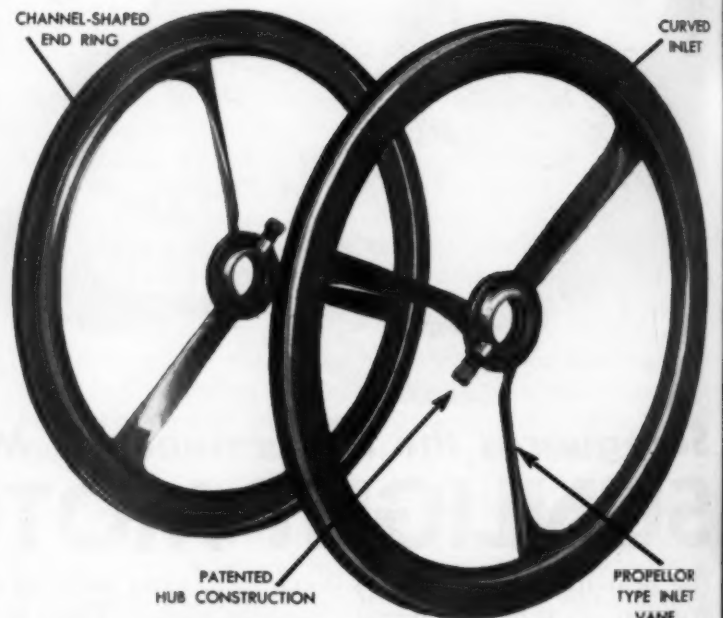
# Morrison *Firststream*

## BLOWER WHEELS

In addition to our one piece blade section construction featured in our March advertisement another *Outstanding* feature of the Morrison Blower Wheel is its end ring design.

Curved inlet facilitates flow of air and greater tolerance in inlet diameter of blower housing

Propellor type inlet vane facilitates air movement through the inlet of blower wheel.



*New 1945 catalogue showing how you can fabricate your blower assembly now available. Write for your copy today.*

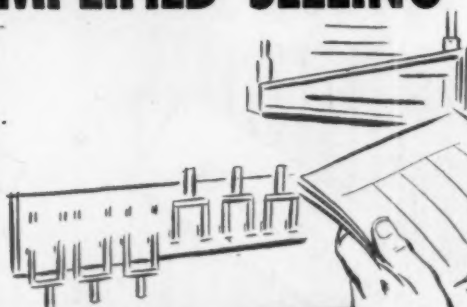
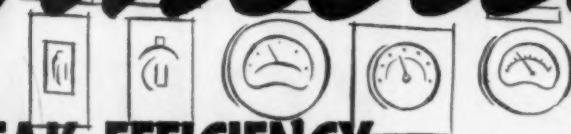


**MORRISON PRODUCTS, INC.**

EAST 168TH & WATERLOO ROAD  
CLEVELAND 10, OHIO

# Engineered

✓ FOR PEAK EFFICIENCY  
✓ FOR SIMPLIFIED SELLING



*Coordinated  
Controlled  
Heating*

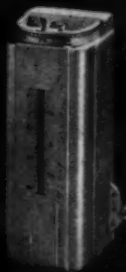
**You End Guesswork in Selection of Controls and Concentrate Your Selling on Your Manufacturer's Name When You Handle "Coordinated Controlled Heating"**

Controls have individual characteristics and design features which require their careful preselection by the manufacturer's engineers to assure peak operating efficiency of the heating plant. That's the reason more and more progressive manufacturers are engineering controls and heating units as an integral package — every part coordinated to work together for maximum fuel economy and assured heating satisfaction.

#### HOW "COORDINATED CONTROLLED HEATING" SIMPLIFIES SELLING

It's easier to sell "Coordinated Controlled Heating" because it gets you over your biggest selling hurdle by eliminating your prospects' resistance to separate names for heating unit and controls. Moreover, with "Coordinated Controlled Heating" you have something exclusive to sell. The controls you offer bear your heating manufacturer's trade name — the name that means most to you because it represents your stock in trade — the name no competitor can use.

#### THE MAGIC DIAL THERMOSTAT



Characteristic of the controls which Perfex manufactures to the specifications of leading producers of heating equipment is the Magic Dial Thermostat. Embodying a distinctive heating device in its thermal element, this thermostat is extremely sensitive to slightest variations in room temperature and maintains close control without overshooting. The Magic Dial Adjustment permits tuning the firing operation to the individual preference of the household.

**Ask Your Manufacturer  
for Details of the Magic Dial  
Thermostat Used in  
"Coordinated Controlled Heating"**



## Perfex

CORPORATION

300 W. OLLANDIA AVENUE • MILWAUKEE 7, WISCONSIN

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK  
NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS

*Fuel-Saving  
Starts With  
CONTROL*

# NAMES...



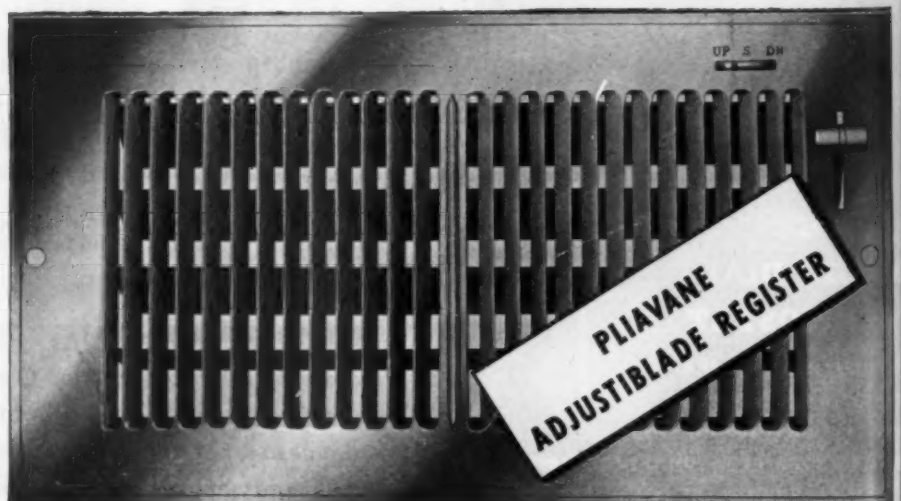
# YOU KNOW



**A**UTHORITIES estimate that 8,000,000 American families are saving now for that house-o'-dreams they'll build when Victory is ours! The Pliavane Register, scientifically engineered for efficient trouble-free performance, is ideally suited for these homes of tomorrow. A standard line, easy to specify and easy to install, the Pliavane makes friends for the sheet metal man!

**THE  
ALL IMPORTANT  
QUESTION ...  
WHEN?**

Uncle Sam's the boss. Just now he asks that we devote our energies to those "must" items which require our particular skills and equipment. . . . But, we have no great problem of reconversion. 'Soon as the green light flashes we can start in a hurry.



**Tuttle & Bailey**  
INC.

**NEW BRITAIN, CONNECTICUT**



# WHO'S FROM

• Kansas City

# MISSOURI

• Springfield

• Joplin



Been listening to some post-war dreamers lately? Some drawing board magicians? Some push-button miracle workers? Some hermits in ivory towers?

Then we hope you're from Missouri . . . that you want to be shown . . .

Because we here at Morrison Steel Products have two things . . . two things that are definitely not "out of this world"--two things that mean business!

Those two things are a product and a policy. The product is the new line of MOR-SUN Pressed Steel Furnaces. The policy is a new type of dealer-manufacturer mutually profitable relationship.

We hope you have the Missouri attitude of mind . . . because we want to show you . . . we want to show you that the MOR-SUN product and the MOR-SUN policy mean business . . .

for both of us!

**MORRISON**  
STEEL PRODUCTS, INC.  
BUFFALO 7, NEW YORK

"The Sun Never Sets with MOR-SUN!"





## The Challenge

JEFFERSONVILLE, INDIANA  
MARCH 6, 1945.

HERMAN NELSON CORP.

GENERAL SOMERVELL, CHIEF OF ARMY SERVICE FORCES, HAS DIRECTED THAT MARCH 1945 BE THE GREATEST VOLUME MONTH OF THE WAR PRODUCTION EFFORT TO DATE. YOU ARE REQUESTED TO EXPEDITE PRODUCTION ON ALL YOUR CONTRACTS WITH THE JEFFERSONVILLE QUARTERMASTER DEPOT, REGARDLESS OF CONTRACT SCHEDULE. ALL FIGHTERS OF THE PRODUCTION FRONT ARE ASKED TO GIVE ALL EFFORT POSSIBLE TO COMPLY WITH GENERAL SOMERVELL'S WISHES IN COOPERATION WITH THE MEN ON THE FRONT FIGHTING LINES.

JEFFERSONVILLE QUARTERMASTER DEPOT

## Our Answer

There could be but one — increased production of the special equipment built by Herman Nelson and shipped overseas to the battlefronts as fast as we can turn it out.

Since the outbreak of war, Herman Nelson has been building special equipment for overseas use of all branches of the Armed Forces. With greatly increased activity in overseas operations, there has been a correspondingly great increase in 1945 requirements for this Herman Nelson-Built Equipment. We'll meet our schedules — yes, and make deliveries ahead of contract if devoting every effort all down the line will make this possible.

For this reason — and you'll agree that it's an all-important one — we may not at all times be able to satisfy the demands for Herman Nelson Heating and Ventilating Products.

However, after the overseas requirements of our Fighting Men are met, we will continue to do our best to provide quality equipment for essential projects of the Army and Navy and for necessary industrial War developments.

We therefore invite you to contact Herman Nelson Branch Offices, Product Application Engineers or Distributors on your heating and ventilating jobs. They will fill your requirements if possible or assist you in solving your problems most satisfactorily if we cannot supply you immediately because of the urgent needs of the Armed Forces.



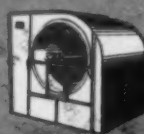
Herman Nelson  
Direct Drive  
Propeller Fans

Herman Nelson  
Belt Drive  
Propeller Fans



Herman Nelson Horizontal  
Shaft Propeller-Fan Type Unit Heaters

Herman Nelson  
Type H  
Centrifugal Fans



Herman Nelson Vertical  
Shaft Propeller-Fan Type Unit Heaters

Herman Nelson  
Type HB  
Centrifugal Fans



# N NELSON has but one answer

## Herman Nelson Branch Offices

Boston—J. E. Carey, Mgr., J. F. Flannery, Product Application Engineer.  
Chicago—C. A. Pickett, Mgr., J. C. Donaldson, Herman Stal, Product Application Engineers.  
Detroit—M. E. Van Vliet, Mgr., E. C. Seyphol, Product Application Engineer.  
Milwaukee—Carl Amundson, Product Application Engineer.  
Minneapolis—Homer Melvin Bird, Product Application Engineer.  
Moline—Anthony Speedis, Product Application Engineer.

New York—Robert F. Ruggles, Mgr., E. V. Loughran, Product Application Engineer.  
Philadelphia—P. A. Cavanagh, Mgr.  
St. Louis—Henry C. Sharp, Mgr., E. Paul Harder, Product Application Engineer.  
Syracuse—Lawrence C. Ward, Product Application Engineer.  
Washington—J. M. Osborne, G. M. Haslop, Product Application Engineers.

## Herman Nelson Product Application Engineers

Albuquerque, N. M.—Boyd Engineering Co., Ltd.  
Atlanta, Ga.—Felix J. Commagere  
Birmingham, Ala.—Hugh C. Boisclair  
Buffalo, N. Y.—Edward H. Cox  
Cape Elizabeth, Me.—The Partridge Co.  
Charlotte, N. C.—Charles M. Setzer & Co.  
Cincinnati, O.—Kenneth B. Little Co.  
Cleveland, O.—H. W. Kaiser Company  
Columbus, O.—Russell H. Smith Equipment Co.  
Dallas, Tex.—W. E. Lewis & Co.  
Denver, Colo.—Fox & Company  
Des Moines, Iowa—Products, Inc.

Duluth, Minn.—Williams-Swanson Co.  
El Paso, Tex.—Boyd Engineering Co., Ltd.  
Grand Rapids, Mich.—O. D. Marshall  
Houston, Tex.—D. R. Rippey  
Indianapolis, Ind.—George Heidenreich  
Jackson, Miss.—H. M. Ludlow  
Kansas City, Mo.—H. H. Wright Company  
Louisville, Ky.—John Zimmermann  
Los Angeles, Calif.—F. J. Hearty & Co.  
Memphis, Tenn.—Southern Sales Co.  
Miami, Fla.—R. P. Kelley  
Milwaukee, Wis.—C. W. Miller

Minneapolis, Minn.—P. R. Reese  
Nashville, Tenn.—Southern Sales Co.  
New Orleans, La.—L. Villere Cressy Co.  
Oklahoma City, Okla.—O. T. Carroll  
Omaha, Neb.—Verne Simmonds  
Pittsburgh, Pa.—Allegheny Engineering Co.  
Richmond, Va.—W. Wallace Neale  
Saginaw, Mich.—W. A. Witheridge Co.  
Salt Lake City, Utah—Rushby C. Midgley  
San Antonio, Tex.—Harry J. Dalton  
San Francisco, Calif.—E. C. Cooley Co.  
Spokane, Wash.—R. L. Nelson

## Herman Nelson Distributors

Babbitt Steam Specialty Co.  
New Bedford, Mass.  
Bailey-Farrell Co.  
Pittsburgh, Pa.  
E. Best Pibg. & Htg. Supply Co.  
Quincy, Ill.  
W. L. Blake & Co.  
Portland, Me.  
The Blodgett Supply Co.  
Burlington, Vt.  
J. C. Bowles Co.  
Seattle, Wash.  
Braid Electric Co.  
Nashville, Tenn.  
Bramhall Supply Co.  
Benton Harbor, Mich.  
Brock-McVey Co., Inc.  
Lexington, Ky.  
Bruce-Rogers Co.  
Fort Smith, Ark.  
Calcasieu Lumber Co.  
Austin, Tex.  
Canney-Plue, Inc.  
Rutland, Vt.  
Careva Company  
York, Pa.  
Carman-Thompson Co.  
Lewiston, Me.  
W. A. Case & Son Mfg. Co.  
Erie, Pa., and Jamestown, N. Y.  
Cedar Rapids Pump & Supply Co.  
Cedar Rapids, Ia.  
Central Metal & Supply Co.  
Baltimore, Md.  
Consolidated Supply Co., Inc.  
Portland, Ore.  
Cooper Supply Company  
Tulsa, Okla.  
Harry Cooper Supply Co.  
Springfield, Mo.  
Cordes Supply Co.  
Milwaukee, Wis.

Dallman Supply Co.  
Sacramento, Calif.  
Desco Corporation  
Wilmington, Del. and Chester, Pa.  
R. B. Dunning & Co.  
Bangor, Me.  
Electric Supply Co.  
Atlanta, Ga.  
Ewinger Supply Co.  
Burlington, Ia.  
Fox Electric Supply Co.  
Elgin, Ill.  
Globe Machinery and Supply Co.  
Des Moines and Cedar Rapids, Ia.  
Griffith Electric Supply Co.  
Trenton, N. J.  
Hajoca Corporation  
Asheville and Charlotte, N. C.,  
Richmond, Norfolk, Roanoke,  
Danville, and Staunton, Va.  
Hall & Knight Hardware Co.  
Lewiston, Me.  
Hansen Supply Co.  
New London, Conn.  
The Hardware & Supply Co.  
Massillon, O.  
Heating Trades Supplies, Inc.  
Toledo, O.  
Holyoke Supply Co., Inc.  
Holyoke, Mass.  
The Hughes Supply Co.  
Mansfield, O.  
Inland Supply Co.  
Champaign and Danville, Ill.  
Inland-Peoria Supply Co.  
Peoria, Ill.  
International Engr. & Supply Co.  
Providence, R. I.  
E. Keeler Company  
Williamsport, Pa.  
The W. H. Kiefaber Co.  
Dayton and Hamilton, O.

Kester Machinery Co.  
Winston-Salem, High Point and  
Burlington, N. C.  
LaCrosse Plumbing Supply Co.  
LaCrosse, Wis.  
Latrobe Plumbing Supply Co.  
Latrobe, Pa.  
Lehigh Valley Supply Co.  
Allentown, Lansdale,  
East Stroudsburg and Easton, Pa.  
LeValley, McLeod, Kinkaid Co., Inc.  
Elmira, Olean, Schenectady, N. Y.  
The Link Company  
Jackson, Mich.  
Luzerne & Lackawanna Supply Co.  
Wilkes-Barre, Pa.  
Manufacturers Selling Co.  
Trenton, N. J.  
Marsden & Wasserman, Inc.  
Hartford, Conn.  
Michigan Supply Co.  
Lansing, Mich.  
Chas. Millar & Son Co.  
Utica and Binghamton, N. Y.  
Springfield, Mass., & St. Johnsbury, Vt.  
Morrison Supply Co.  
Fort Worth, Amarillo, Lubbock,  
Wichita Falls and Sweetwater, Tex.  
Mott Bros. Company  
Rockford, Ill.  
Murphy Supply Co.  
Green Bay, Wis.  
The Ohio State Supply Co.  
Youngstown, O.  
Palmer Plumbing Supply Co.  
Laconia and Rochester, N. H.  
Palmer Supply Co.  
Portland, Me.  
The Penn State Supply Co.  
Sharon, Pa.  
Reading Foundry & Supply Co.  
Reading, Pottsville, and Lebanon, Pa.

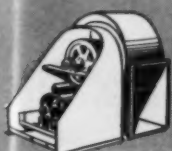
W. J. Riley Supply Co.  
Monroe, La.  
Robbins-Gamwell Corporation  
Pittsfield, Mass.  
The Roedel Company  
Zanesville, O.  
The Salina Supply Co.  
Salina, Kan.  
San Antonio Machine & Supply Co.  
Corpus Christi and Waco, Tex.  
Southern Equipment Co.  
San Antonio, Tex.  
Strong, Carlisle & Hammond Co.  
Cleveland, O.  
Tay-Holbrook, Inc.  
San Francisco, Fresno, San Jose and  
Stockton, Calif.  
The Tholen Bros. Supply Co.  
Leavenworth, Kan.  
The Topeka Steam Boiler Wks. Co., Inc.  
Topeka, Kan.  
Trimble & Lutz Supply Co.  
Wheeling, W. Va.  
Geo. E. Trudel Co.  
Manchester, N. H.  
U. S. Supply Co.  
Kansas City, Mo., Wichita, Kan.,  
Oklahoma City, Okla.,  
and Omaha, Neb.  
The Universal Supply Co.  
Parkersburg, W. Va.  
J. A. Walsh & Co., Inc.  
Houston, Texas  
Washburn-Garfield Co.  
Worcester, Mass.  
Western Maryland Supply Co.  
Hagerstown, Md.  
Wigman Company  
Sioux City, Ia.  
Yelton-Weaver Supply Co.  
Springfield, Ill.



## THE HERMAN NELSON CORPORATION

Manufacturers of Quality Heating and Ventilating Products

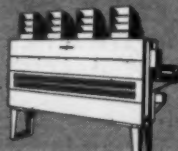
GENERAL OFFICES: MOLINE, ILLINOIS • FACTORIES AT MOLINE, EAST MOLINE AND CHICAGO, ILLINOIS



Herman Nelson  
Belt Drive  
Unit Blowers



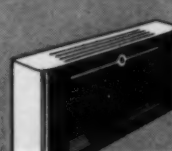
Herman Nelson  
Direct Drive  
Unit Blowers



Herman Nelson  
Blower-Fan Type  
Unit Heaters



Herman Nelson  
De Luxe Unit Heaters



Herman Nelson  
Unit Ventilators



# Master Kraft WILL SET THE PACE

with  
**NEW PRODUCTS...  
NEW SELLING IDEAS**

There's a race going to start one of these days . . . a race among all the oil heating dealers in your community, to see *who* will be first in the market with a modern, NEW postwar line. ONE dealer will WIN—will clean up some real money by stepping out and grabbing the cream of the postwar sales ahead of his competitors.

There's a war to be won first—we all know that. The race cannot start until V-Day, when the government gives the O.K. to both manufacturers and dealers. But if you want to win the race in *your town*, team up, *now*, with Master Kraft.

The Master Kraft postwar line is NEW—yet thoroughly tried out in war service. It incorporates startling advances, to make your selling easy, your installations simple, your profits greater. Master Kraft Dealers will be backed by a forceful advertising campaign, bristling with new selling ideas, tailor-made to fit the postwar market.

If you want to set the pace in your community, postwar, write us NOW.

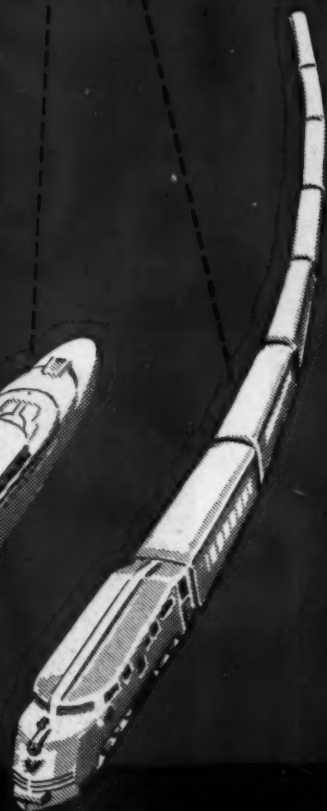
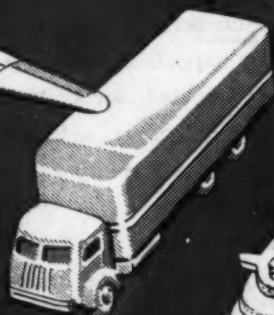
**MEANTIME—WORK FOR VICTORY—AND BUY MORE WAR BONDS!**

**HARVEY-WHIPPLE**  
INCORPORATED  
SPRINGFIELD, MASSACHUSETTS

# HUSSEY

## ...IN TRANSPORTATION

In the post war era, wherever man travels, or world trade brings prosperity—there you will find Copper doing the jobs that no other metal can equal. There too, will be proven again, the superiority and outstanding dependability of Hussey Copper and Copper products. Hussey engineers armed with new developments in Copper will welcome the opportunity of cooperating with you now.



**HUSSEY**

### C. G. HUSSEY & COMPANY

(Division of Copper Range Co.)

ROLLING MILL and GENERAL OFFICES: PITTSBURGH, PA.

Warehouse Stocks in New York, Philadelphia, Cleveland, Cincinnati, St. Louis & Chicago

Contact your nearest warehouse.

# YORK-HEAT



With plans, plant, and personnel ready to go, York-Heat awaits the green light. Oil-fired equipment will really come into its own, when peace is restored . . . and York-Heat intends to add to its war-won laurels in the post-war national market.

War experience and research, in the fields of engineering and production, have created a new standard of compactness, efficiency, reliability, and economical operation in the line which will pace the industry . . . York-Heat, the finest and most complete line of domestic, commercial, and industrial oil-fired equipment in America!

## YORK-HEAT

### DOMESTIC AUTOMATIC HEATING EQUIPMENT

The York-Heat dealer has what it takes to meet and master competition in the field of automatic home-heating. He has a model to fill the needs of every householder-prospect, bar none . . . conversion oil-burners, boiler-burner units, Winter air-conditioners, automatic vaporizing water heaters . . . engineered, styled, and built to a standard of perfection never achieved before, and incorporating many exclusive, patented features.



Back of him is high-powered national advertising . . . a complete dealer-distributor plan for cooperative local advertising . . . a sales-closing financing plan . . . guaranteed Bonded Installation.



***We will gladly have the York-Heat representative in your territory furnish you with full particulars, upon request. Write us today!***

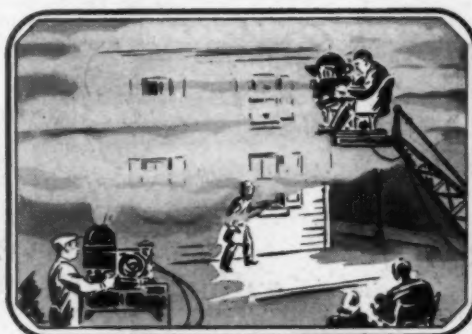
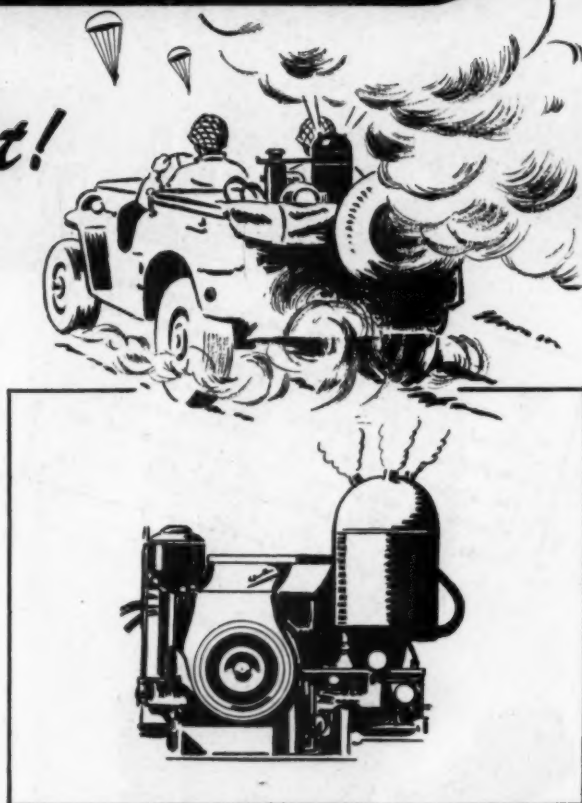


# BLANKETS THE MARKET

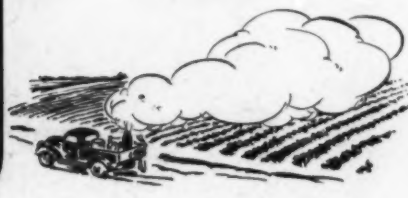
*This, too, is York-Heat!*

**TODAY...** The Fog (smoke-screen) Generator . . . remarkable war-time development of York-Heat . . . weighs only one-tenth as much as machines formerly used to do the same job. It is operated by one man . . . vaporizes 100 gallons of oil per hour . . . and can blanket a square mile of combat-area with dense fog, in five minutes.

**TOMORROW...** This military application of York-Heat shows promise of many novel and important uses in the post-war era, especially in truck farming, fruit growing, and motion picture production. This is no mere accident. York-Heat planned it that way.



LET'S FINISH THE JOB  
RIGHT—BUY MORE BONDS



## YORK-HEAT

Division of YORK-SHIPLEY, INC., YORK, PA.

Member Oil Heat Institute of America

DOMESTIC ★ COMMERCIAL ★ INDUSTRIAL OIL-FIRED EQUIPMENT



## EASY TO GET THE ORDER

WITH PROOF OF PERFORMANCE\* LIKE THIS

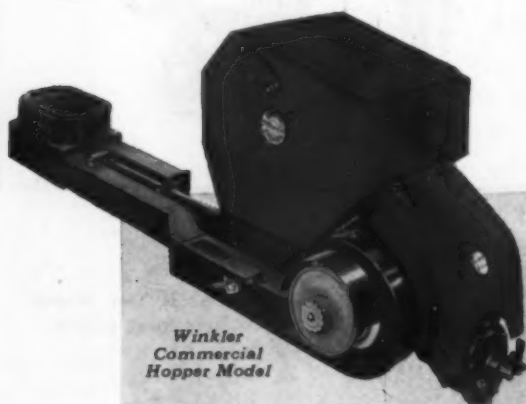


\* "Although last year our production was much higher than the previous year, we burned less coal with the Winkler Stoker. The Stoker is not only a great time saver, but assures us an even steam pressure at all times, controlled automatically."

Any equipment is best judged by what its users say about it. That's why Winkler Distributors have little trouble in getting a quick decision in their favor. They have plenty of evidence (*like the letter reproduced at left*) that Winkler owners are more than happy with their selection. Who couldn't get the order when performance records prove that a Winkler actually makes its owner a substantial profit.

For money-saving dependability, year after year, the Winkler challenges comparison. It has a *fully automatic* transmission—*no shear pin!* Its Econo-mizer Burner utilizes the full heat content of the coal . . . its air-cooled tuyeres don't burn out . . . its extra heavy dead plates are warp-proof! Ruggedly, powerfully constructed, the Winkler stands up under the toughest boiler room conditions.

The high quality of this complete line of stokers is backed by thorough training of distributors in the selling methods which make Winkler Stoker merchandising one of today's most profitable enterprises. The U. S. Machine Corporation is the kind of company people like to do business with . . . the sincere regard of the factory for the needs and problems of Winkler dealers has created an organization known for its loyalty. It is genuine loyalty, *because it is won!*



Winkler  
Commercial  
Hopper Model

Winkler Stokers are now available without priority for residences, apartments, commercial and industrial buildings . . . in both Bituminous and Anthracite models.



Winkler  
Industrial  
Hopper Model



Winkler  
Commercial  
Self-feed Model

# WINKLER

*fully automatic* STOKERS

U. S. MACHINE CORPORATION • LEBANON, INDIANA

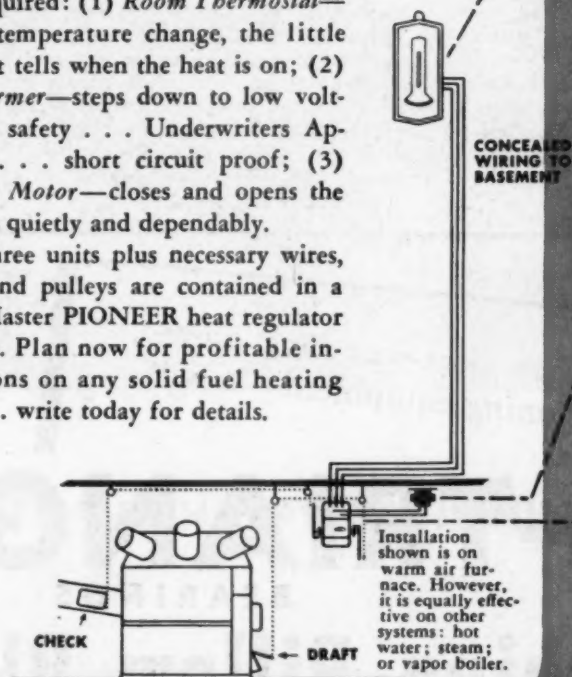


# Just 3 EASY TO INSTALL units IN PIONEER TEMPERATURE CONTROL SYSTEMS\*

## PROVIDE THIS INEXPENSIVE DEPENDABLE REGULATION

THE DIAGRAM shows the three essential units required: (1) *Room Thermostat*—detects temperature change, the little red light tells when the heat is on; (2) *Transformer*—steps down to low voltage for safety . . . Underwriters Approved . . . short circuit proof; (3) *Damper Motor*—closes and opens the dampers quietly and dependably.

All three units plus necessary wires, chains and pulleys are contained in a single Master PIONEER heat regulator package. Plan now for profitable installations on any solid fuel heating plant . . . write today for details.



THERMOSTAT



TRANSFORMER



DAMPER MOTOR

\*Various types of safety limit control and time switches available if desired.

# PIONEER

CONTROLS

THE MASTER ELECTRIC CO.  
AIRCRAFT AND ELECTRICAL CONTROLS DIVISION  
DAYTON 1, OHIO



# New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 116.

## 134—Bulletin SW-1 Blowers and Turbines

L. J. Wing Mfg. Co., 57 Seventh Ave., New York 11, has issued a condensed bulletin covering Wing Forced Draft Blowers, both turbine driven and motor driven, and Wing Auxiliary Turbines.

Information includes photographs of installations, capacity curves, dimension tables and operating data.

## 135—Electrolytic Cleaning Compound

W. D. MacDermid Chemical Company, Bristol, Conn., is distributing a 4-page folder with shop data about Ferrodex, an electrolytic cleaning compound, for oil, grease, or emery polishing.

Ferrodex is intended for general use prior to cadmium, zinc, tin, copper and brick nickel plating.

## 136—Thermo-Grip Electric Soldering Tools

Ideal Commutator Dresser Co., 1292 Park Ave., Syra-more, Illinois, is distributing a folder illustrating and describing the Thermo-Grip electric soldering tools for the new higher melting point solders.

The Thermo-Grip is available in Midget, Giant and Heavy Duty Plier type. An 88-page descriptive and illustrated handbook No. 143 gives information on the complete line of Ideal soldering equipment, wire stripping equipment, motor maintenance equipment, wiring devices and tools.

## 137—Steel at Your Service

Chicago Steel Service Co., Ashland Avenue at 39th Street, Chicago 9, is distributing their "1945 Stock List," with complete pricing information; stock length bar weights shown in addition to the weight per foot; stainless steel section shows numerous booklets containing metal-lurgical information and fabricating advice on Stainless Steel, which are available to the trade; without cost and numerous tables and data for the steel working industry.

## 138—Uniduct System of Duct Installation

General Heating Products Co., 3353 University Avenue, S. E., Minneapolis 14, has just published a new 4-page folder on their Uniduct system of duct installation for forced air heating. In the Uniduct system, forced warm air is delivered through small round pipes contained within the return cold air ducts. One plenum is used for both warm and cold air take-offs; one trunk for both warm air supply and cold air return; one stackhead for supply and return; and one register for delivery and return.

## 139—Lincolnweld Arc Welding Process

The Lincoln Electric Company, Cleveland 1, Ohio, is distributing a 24-page booklet on their new automatic shielded arc welding process—Lincolnweld.

In this process, granular flux is deposited on the joint to be welded, deep enough to cover the completed weld. Bare metallic welding electrode is power-fed into the blanket of flux. Direct current supplied by the Lincoln Welder produces the arc, and the resultant arc heat fuses the electrode and parent metal, producing the weld. Flux adjacent to the arc melts, floats on the surface of the molten metal, then solidifies as a slag on top of the weld.

This basic idea is fully pictured and described, along with the advantages. Procedures with tables for butt welds, fillet welds, and lap welds are included. Typical installations are pictured.

If you are developing new post-war fans, blow-ers, or other air conditioning equipment—it will pay you to investigate

# TRIANGLE

BEARINGS

## Shock-Absorbing Pillow Blocks

They are silent—vibrationless—self-lubricated—scientifically streamlined for compactness, simplicity, strength and mini-mum obstruction to air flow.

*Write for samples and complete information*

**TRIANGLE MANUFACTURING CO.**  
392 DIVISION STREET OSHKOSH, WISCONSIN

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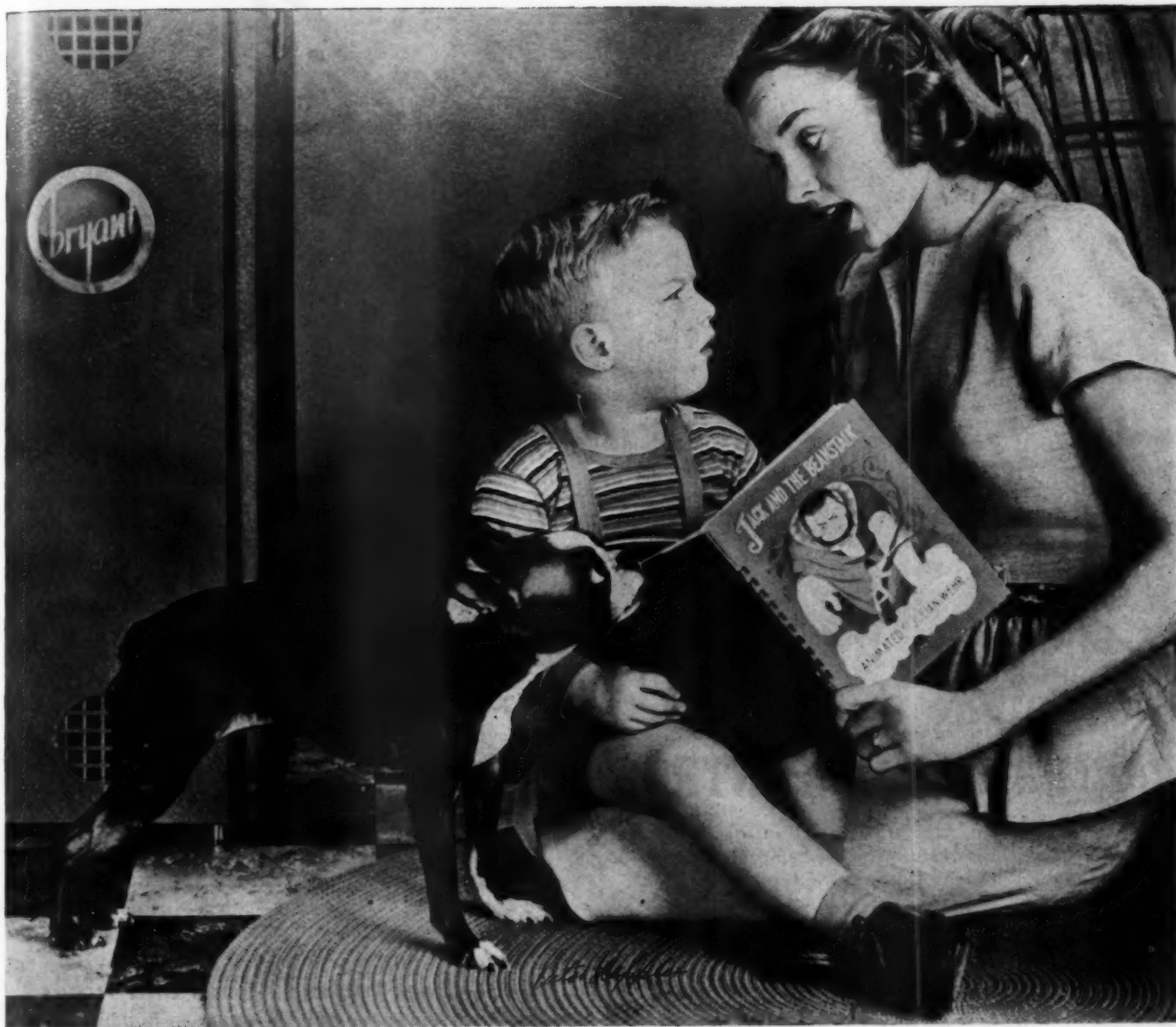


Illustration from Bryant national advertisement

## YOU WRITE THE HAPPY BEGINNING!

Tomorrow's new home buyers will be wise buyers. They will expect from you what you always have wanted to give them... *more home heating comforts and conveniences!*

The problem of heating probably will be left more completely in your hands. And Bryant gas heating, backed, postwar, by the nation's most complete line of gas home heating equipment, often will supply your best answer. You will have a far wider choice of efficient, automatic gas-operated units, ranging from in-

dividual room heaters to complete central heating installations, equipment to accomplish zone heating for the large residence or to tuck away in a closet of the small basement-less home.

Yes, an expanded line of Bryant gas heating equipment will be available in the days ahead. With it, you can start new homeowners off without a single heating worry by selling Bryant automatic gas heating.

THE BRYANT HEATER CO., CLEVELAND, OHIO  
One of the Dresser Industries

**bryant**  
**GAS**  
**HEATING**



LET THE PUP BE FURNACE MAN



# Sampsel

## BUILDS A GREAT WARM AIR LIMIT CONTROL

Advanced design, rugged construction, dependable action! These features of the Sampsel Warm Air Limit or Bonnet Control are typical of all Sampsel Furnace Controls. This precision-built Control works in connection with Thermostat and Damper Control to regulate and limit heat within the furnace . . . increasing fuel efficiency and economy. Its modern ivory finish is in keeping with the trend for more attractive basement equipment.



Sampsel Controls are supplied individually or as complete packaged units. Shown is Package Unit No. 8873, which includes the Sampsel Standard Thermostat, Damper Control with built-in transformer, Warm Air Limit or Bonnet Control, and all installation accessories.

WRITE TODAY for the Sampsel Catalog, illustrating the extensive line of Sampsel Controls for furnaces and boilers!

**SAMPSEL TIME CONTROL, INC.**  
SPRING VALLEY, ILLINOIS



# New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 116.

### 140—Agitair Air Filters

Air Devices, Inc., 17 East 42nd Street, New York 17, is distributing Bulletin AF 44-1 covering Agitair air filters for warm air heating systems, for ventilating and air conditioning systems, for heavy-duty and industrial services, grease extraction, etc.; both permanent and cleanable. Two of the fourteen pages are devoted to Agitair diffusers.

### 141—Ideas for Low-Cost Maintenance

The Lincoln Electric Company, 12818 Coit Road, Cleveland 1, has materially revised the contents of their booklet "101 Welding Ideas for Low-Cost Maintenance." There are sixteen illustrated pages with text, showing reclamation of worn parts, repair of broken parts and structures, replacement of worn or broken equipment with welded designs, construction of special shop equipment and structures, with a page devoted to the various electrodes for essential welding and hard-facing needs.

### 142—Low Temperature Welding Alloys

Eutectic Welding Alloys Company, 40 Worth Street, New York 13, has issued a 4-page folder, explaining in understandable terms Eutectic low-temperature welding alloys. Features claimed are low bonding temperatures; less preheating of parent metal; less after machining and cleaning; strength; economy.

Specific applications, uses, and specifications on design and procedure of the various rods are features. A full-page assortment chart to aid engineers, technicians and welders in selecting the proper rod is included.

### 143—Steel Lockers—Sizes and Types

The Steel Locker Council, 737 Guardian Building, Cleveland 14, is distributing Bulletin No. 47 entitled "Steel Lockers," with specifications of sizes and types, in accordance with National Bureau of Standards Simplified Practice Recommendation R35-44.

Standardization of Nomenclature, Installation Details, and Specification Hints are included. The Steel Locker Council presents this information to assist architects and users in so drawing their specifications as to cover lock equipment during reconversion, when only a limited quantity of dies, tools and skilled labor, used in both manufacturing and installation, will be available.

### 144—Rubber Adhesives

The B. F. Goodrich Company, Akron, Ohio, has published a new booklet on the natural and synthetic rubber adhesives which it manufactures. Directions for the application of natural and synthetic rubber cements are included.

Synthetic rubber cements designed to meet bonding requirements for synthetic rubber products are also described and the instructions for their use given.

One of the most important parts of the new publication is the discussion on how to choose the right kind of cement for various applications. The booklet also outlines the differences between the vulcanizing and non-vulcanizing types of rubber cement, and contains a table giving data on cement weights, colors, and base materials used.

Many of the general applications for rubber cements are listed in an alphabetical table, which includes the designation, by number, of the B. F. Goodrich adhesives recommended for successful bonding in each case.



# Why do they keep batting averages?

ANSWER: *So you can judge the worth of the player and predict his future performance!*

Until he has a batting average all a player can do is *talk* a good game. The player who has a hitting history is the one you can count on for hits in the future.

It's the same in the stoker business.

Fairbanks-Morse was the *first* to have a famed industrial designer put eye appeal into stokers so its dealers would have the edge on sales.

Fairbanks-Morse was the *first* to build a fully automatic air control into the stoker itself.

Fairbanks-Morse was the *first* to put into a stoker a precision-built, ball bearing transmission.

These are but a few of Fairbanks-Morse "*firsts*" in the stoker industry—the "*firsts*" which have enabled Fairbanks-Morse Dealers to pile up a record of sales and profits.

Now the engineers who have made that record are working constantly—designing, testing and succeeding in those things which will make the Fairbanks-Morse Automatic Coal Burner the outstanding dealer opportunity.

*Keep your eye on the stoker with a record. Fairbanks, Morse & Co., Fairbanks-Morse Bldg., Chicago 5, Illinois*

**DEALERS!** There may be a dealership open in your trade area. Write at once for information and details on attractive dealer proposition and profit opportunities.



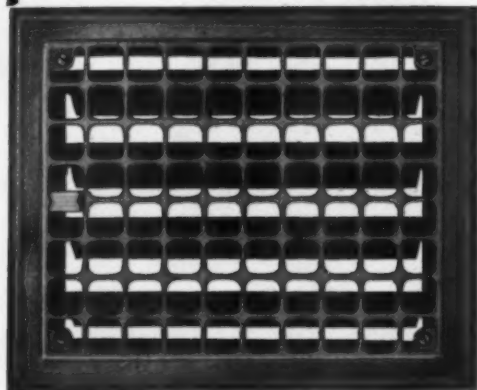
## Fairbanks-Morse

A name worth remembering

*America's Finest Automatic Coal Burners*



# CLASS 200 STEEL FLOOR REGISTERS



## Again in Production To Help Meet A Critical Situation

Steel and manpower available are far less than required to meet the demand for H&C registers of all types. Frankly, it's a critical situation, for in spite of every effort, it appears inevitable that we shall fall far short of being able to supply our established customers with all of the registers needed in 1945.

In our endeavor to stretch steel allotments and manpower to the limit we have reverted, for the duration, to Class 200 Floor Registers for the simple reason that we can make six times as many Class 200 registers as Class 210 in any given number of man-hours. That means that, with Class 200, we can furnish six times more floor registers than otherwise—a fact that every thinking installer will appreciate.

**FOR BEST SERVICE . . .** order strictly in conformity with Bulletin S-95 which lists all items now being manufactured. Standard sizes listed for Class 200 are: 6x8, 8x10, 8x12, 9x12, 10x12, 10x14, 12x14. Other sizes of floor registers listed in Bulletin S-95 will be furnished in Class 210.

Ask your jobber or write us for copy of Bulletin S-95 if you do not have one. See Catalog No. 42 for details of registers and accessories.



**HART & COOLEY MANUFACTURING CO.**

**World's Largest Manufacturers of  
Registers, Grilles, Furnace Accessories  
HOLLAND • MICHIGAN**

## New Literature

For your convenience in obtaining copies of new literature use the coupon on page 116.

### 145—Rust-Removing and Metal Cleaning

American Chemical Paint Company, Ambler, Pa., is distributing a 4-page Technical Service Data sheet covering Deoxidine for rust-removing and metal-cleaning. Deoxidine cleans metal, removes rust and conditions metal surfaces for paint.

### 146—Fastenings Catalog Data Book

Parker-Kalon Corporation, 190 Varrick St., New York 14, offers the Parker-Kalon catalog of self-tapping screws, socket screws and other fastening devices (revised and amended) in its sixth edition. Much new information has been added on the many types of Parker-Kalon screws, along with well illustrated instructions on where and how to use them. Tables have been improved and simplified to make the catalog even more useful than before as an engineering manual of fastening data.

### 147—Blo-Fan

Pryne & Company, Inc., 1245 E. 33rd Street, Los Angeles 54, is distributing a folder entitled "X Marks the Danger Spots in Your New Home," (kitchen, bath and den). The Blo-Fan (a combination of fan and blower) acts as a booster to natural ventilation, and is placed directly above the origin of the odors, thus making less competition with cross drafts into other rooms. Blo-Fans are made in two sizes.

## H&C DAMPER REGULATOR SETS



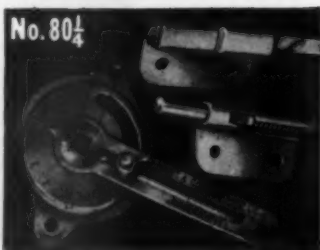
**ECONOMY TYPE.** Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with 1/4" bearings.

LIST PRICE.....No. 40 1/4 S.....\$0.30



**BRACKET TYPE.** Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on 1/4" size, Solid Bearing on 3/8" size. Each set individually packaged.

LIST PRICES.....No. 50 1/4.....\$0.40  
No. 50 3/8.....\$0.60



**DISK TYPE.** Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on 1/4" size, Solid Bearing on 3/8" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 1/4.....\$0.40  
No. 80 3/8.....\$0.60

See your jobber or write for literature and sample.

**HART & COOLEY MANUFACTURING CO.**  
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.

# A COMPLETE LINE OF GRAVITY AND FORCED AIR



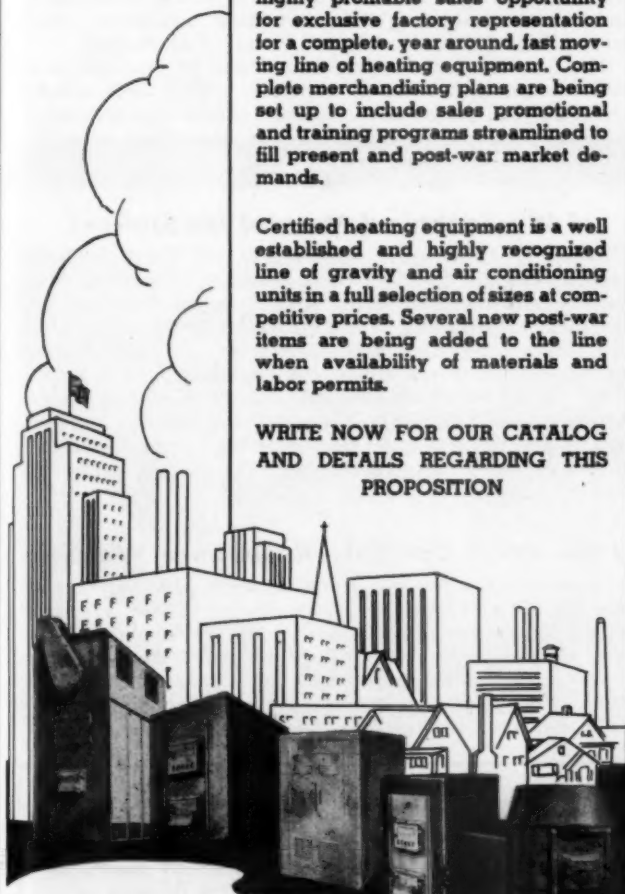
## FURNACES

AN OUTSTANDING  
OPPORTUNITY FOR  
EXCLUSIVE  
TERRITORIAL  
REPRESENTATION

Here is an offer which presents a highly profitable sales opportunity for exclusive factory representation for a complete, year around, fast moving line of heating equipment. Complete merchandising plans are being set up to include sales promotional and training programs streamlined to fill present and post-war market demands.

Certified heating equipment is a well established and highly recognized line of gravity and air conditioning units in a full selection of sizes at competitive prices. Several new post-war items are being added to the line when availability of materials and labor permits.

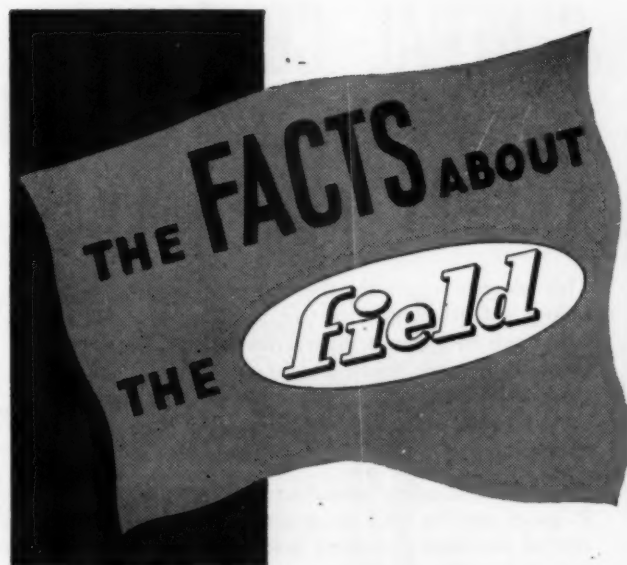
WRITE NOW FOR OUR CATALOG  
AND DETAILS REGARDING THIS  
PROPOSITION



THE PROPER  
TYPE OF UNIT FOR  
EVERY KIND OF BUILDING

**CERTIFIED FURNACE CO.**

DIVISION OF STAINLESS & STEEL PRODUCTS CO.  
1000 BERRY AVE. ST. PAUL 4, MINN.



GATE BALANCED  
AT FACTORY

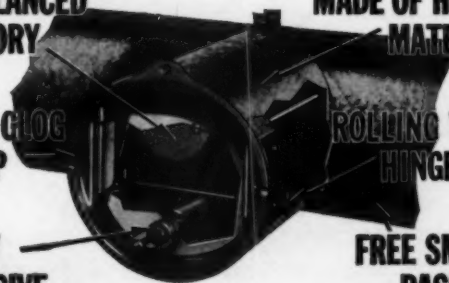
MADE OF HEAVY  
MATERIAL

DOESN'T CLOG  
OR WARP

ROLLING TYPE  
HINGE PIN

QUICKLY  
RESPONSIVE

FREE SMOKE  
PASSAGE



### ROCKER TYPE FULCRUM

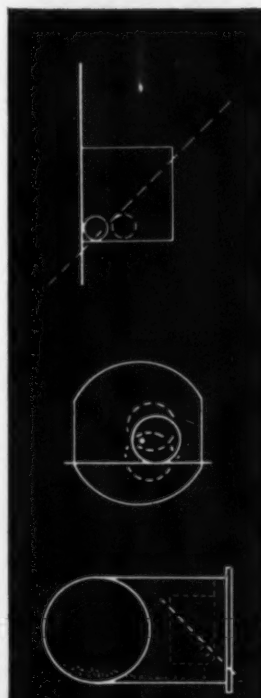
This design — the action of the old rocking chair — means less friction. Less friction means greater accuracy, greater sensitivity, no binding, no oiling, nor corrosion and years of trouble free operation. The hinge pin rolls in slots, instead of twisting in journals.

### OFF CENTER GATE MOUNTING

This mounting — coupled with side wings — provides greater sensitivity and greater accuracy. Barometric pressure operates on a greater effective area; the side wings increase the air opening more uniformly, more accurately compensating for each barometric change.

### EXTENDED HOUSING

This design places the gate — even in wide open position — outside the flow of gases from the heating unit. Thus the Field Control is not readily fouled by soot, nor will the gate warp from heat. This means longer operating life — no service calls — uniform regulation.



CONTROL DIVISION

OF H. D. CONKEY & COMPANY, MENDOTA, ILLINOIS



# GENERAL CONTROLS

## MR-2

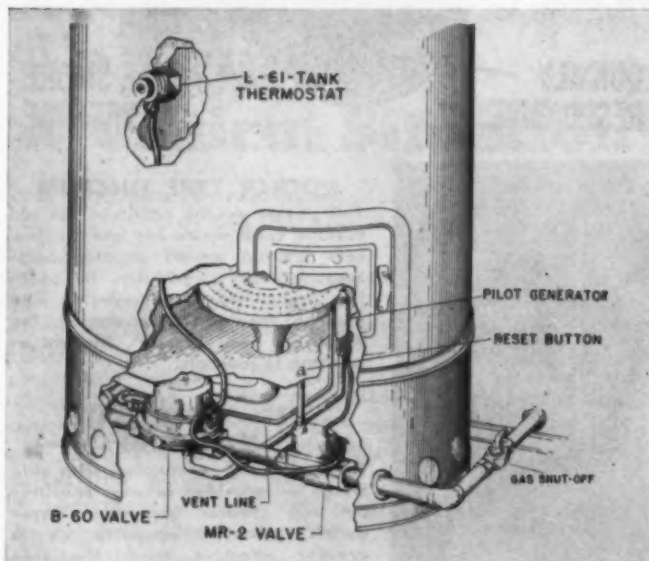
### SAFETY GAS VALVE

This electro magnetic thermovalve assures un-failing safety in gas control applications. It is held open by current supplied by the G. C. Pilot Generator, and flame failure from any cause closes the valve. 100% gas shut-off will be maintained until pilot light is re-ignited and valve manually reset.

The MR-2 handles manufactured, natural or L. P. gases, and is used on space and unit heaters, central and floor furnaces, water and range heaters, hot water and steam boilers, commercial ovens and industrial furnaces. Here is a typical installation:

#### WIRING DIAGRAM

#### ALL GAS WATER HEATER CONTROL SYSTEM



In the above diagram, the MR-2 is used as an out-pilot safety control. No outside current is required. If all conditions are safe, MR-2 will hold open until released by pilot-flame failure. This hook-up should suggest many other applications and set-ups for overlimit and safety control.

For further information on the MR-2, or other G. C. Magnetic Controls, write the nearest Factory Branch, Distributor, or direct to

**GENERAL CONTROLS**  
801 ALLEN AVENUE  
GLLENDALE 1, CALIF.  
FACTORY BRANCHES: PHILADELPHIA • ATLANTA  
DALLAS • DENVER • DETROIT • CLEVELAND • HOUSTON • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES  
BOSTON • CHICAGO • KANSAS CITY • NEW YORK

## New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

#### 148—Technicolor Film on Arc Welding

The Lincoln Electric Company, Cleveland, portrays the dramatic progress of arc welding from its beginnings to its present vital wartime role in a new Technicolor sound motion picture titled "Magic Wand of Industry—Arc Welding," just released. There are also scenes which take the audience into the welding world of tomorrow.

Produced at the request of the U. S. Bureau of Mines which is releasing the picture under the title "A Story of Arc Welding," this 25-minute presentation, filmed under the technical direction of Lincoln welding engineers, was staged and photographed in practically every major industry including airplane factories, shipyards, refineries, steel mills and Shasta Dam.

Primarily educational, the film graphically presents the fundamentals of arc welding, the electrical circuit, and the types of welded joints. The true action inside the arc is also revealed for the first time in actual photography and animation, showing the penetrating "arc force" which assures high strength and good fusion of all metals.

The film is available in 16 mm. and 35 mm. prints to business groups, technical societies, schools and colleges and industrial plants at no charge except transportation. A short version is scheduled for theatrical showings throughout the country.

#### 149—Technical Manual for Stokers

Stoker Manufacturers' Association, 307 North Michigan avenue, Chicago 1, offers the new SMA "Technical Manual on Industry Standards, Recommended Practices and Technical Information," for distribution to the stoker trade and others interested in the selection and application of mechanical underfeed stoker equipment.

In the review of this manual, in the March American Artisan, page 110, the cost was omitted, through an oversight. The price is \$1.00 for single copy orders; 85c each in lots of ten to fifty copies; and 75c each in orders for over fifty copies.

#### 150—Prize Contest—Resistance Welding

The Resistance Welder Manufacturers Association, Citizens Building, Cleveland 14, is offering \$1,000 in prizes for papers on resistance welding—design, application, research. The contest closes July 31, 1945. The American Welding Society will appoint three judges, who will judge the relative merits of the various papers submitted, and make awards. Complete information is available.

#### FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.  
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

26	27	28	29	30	31
134	135	136	137	138	139
141	142	143	144	145	146
148	149	150			147

Name .....

Company .....

Address .....

Are you Manufacturer—Jobber—Dealer—



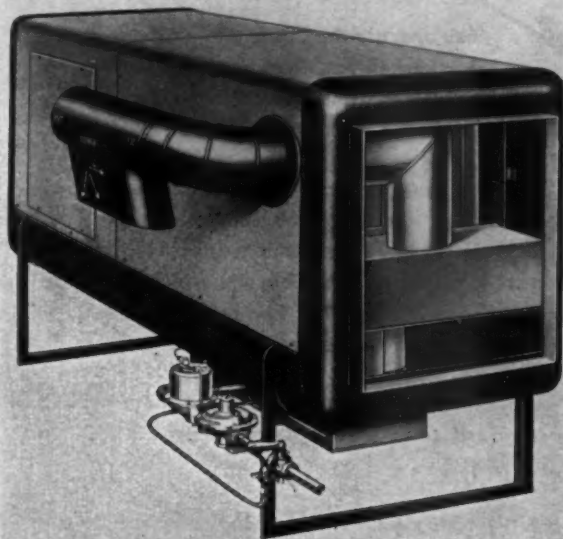
# HIGH RANK

PEXTO Sheet-Metal Fabricating Machines and Tools rank high as an essential for battle gear maintenance and the production of War products on the home front. For 160 years the PEXTO Trademark has stood for meeting every emergency.



SQUARING SHEARS  
MANUAL AND POWER OPERATED

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHINGTON, CONNECTICUT, U. S. A.



## PAYNE MODELS meet EVERY heating need

You have the equipment to match the job . . . when you handle PAYNE gas-fired, warm air furnaces. The PAYNEHEAT "line" is complete. To Dealer and Gas Company, this means *more sales and satisfied customers*. ★ The "Space-saver" Unit, like other PAYNE models, reflects more than 30 years' specialized experience. All these models, progressively improved, will again be available . . . as men and materials are released from war production.

### PAYNE ZONE-CONDITIONING

Successor to old-fashioned central heating. Winter air-conditioning plus cooling summer ventilation . . . controlled by zones or rooms. *Request new booklet.*

PAYNE FURNACE COMPANY  
(One of the Dresser Industries)  
BEVERLY HILLS, CALIFORNIA

### TIGHT SQUEEZE?

Space at a premium? No basement? Under these conditions, in home, shop, factory or other building, consider the . . .

PAYNE "SPACE-SAVER"  
(HU) FORCED AIR UNIT



**PAYNEHEAT**  
OVER 30 YEARS OF LEADERSHIP



## With the Manufacturers

### Viking Enlarges Plant

The Viking Air Conditioning Corporation, 5600 Walworth Avenue, Cleveland, has recently enlarged its plant facilities by adding another floor to its building and occupying an adjacent building.

The new building houses new and heavy presses which were installed for the manufacturing of invasion pipe



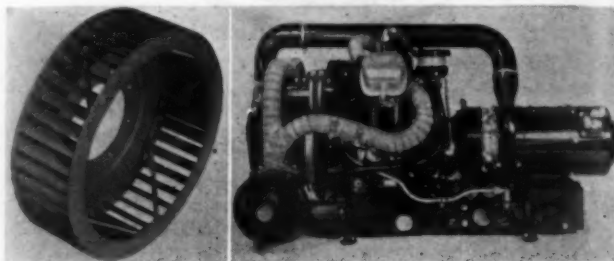
clamps for the Armed Forces. These giant presses will be convertible to Viking's post-war operations in the manufacturing of blowers, humidifiers, attic and industrial fans.

Much of the plant equipment, now used exclusively for war work, will be arranged to permit automatic assembly-line production when conditions again return to normal. The entire Viking post-war production method will be a completely new departure from the old method of manufacturing air conditioning equipment.

### Lau Wheels Help Bomb Tokyo

A Lau Blower special single-inlet fan wheel by The Lau Blower Co., Dayton 7, Ohio, cools the Andover Accessory Power Unit produced by Andover Motors Corporation and the Ranger Aircraft Engine factory for the Boeing B-29 Superfortress.

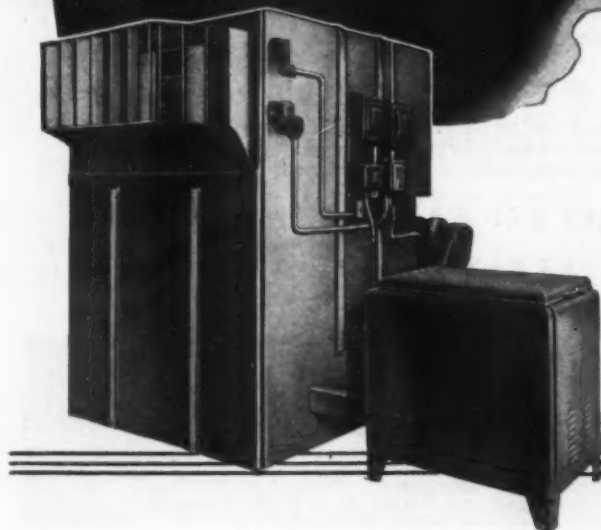
For several months now, the Boeing B-29 Superfortress has highlighted the news of bombing in the Pacific War Theater. Capable of carrying the heaviest bomb load



faster, farther, and higher than any other military aircraft, this great bomber is playing a vital part in the war in the Pacific. So large is the B-29 that it requires over 140 small electric motors to drive the various mechanisms, such as bomb bay doors, radio, etc. The radio and many of the electric motors must be operated while the airplane is on the ground in taxiing operations, and in ground checking the electrical equipment. The power for these operations is supplied by Andover Accessory Power Plants. The Accessory Power Plants also serve as an emergency stand-by source of power in flight when part of the electrical system has been shot out or the main engine generators become inoperative.

Thousands of these special Lau fan wheels are being mass-produced in the Lau Factory for the B-29's.

**Airtherm Direct-Fired  
Unit Heaters**  
Give You Warm Air Heat  
Only Where and When  
You Want It!



✓ You operate the Directtherm Unit only those hours when you need heat—absolutely no waste of fuel due to stand-by loss. There is no danger of freeze-up when the unit is turned off over night.

The Directtherm Heater has a minimum number of parts, high efficiency on the combustion chamber, comparatively low outlet temperature, and a horizontal high velocity air stream with adjustable wide angle of warm air delivery. Can be adjusted to give you heat only where you want it, when you want it.

The Directtherm Heater is scientifically built in 6 standard sizes with capacities from 300,000 to 1,500,000 BTU's.

Write today for bulletin giving complete details and specifications on this versatile, efficient heating unit.

**AIRTHERM**  
MANUFACTURING CO.

706 S. Spring Avenue

St. Louis 10, Missouri



# Auer HEAT-RITE REGISTERS for WARM AIR SYSTEMS

The Auer Heat-Rite gives you both efficiency and smart design in a warm air register. It has abundant open area, bendable fins for upward, level, or downward air flow. Made for easy, neat, tight installation. Streamlined design makes this a register of refinement and good taste in any surroundings. Furnished for baseboard or wall location, also for baseboard intakes.

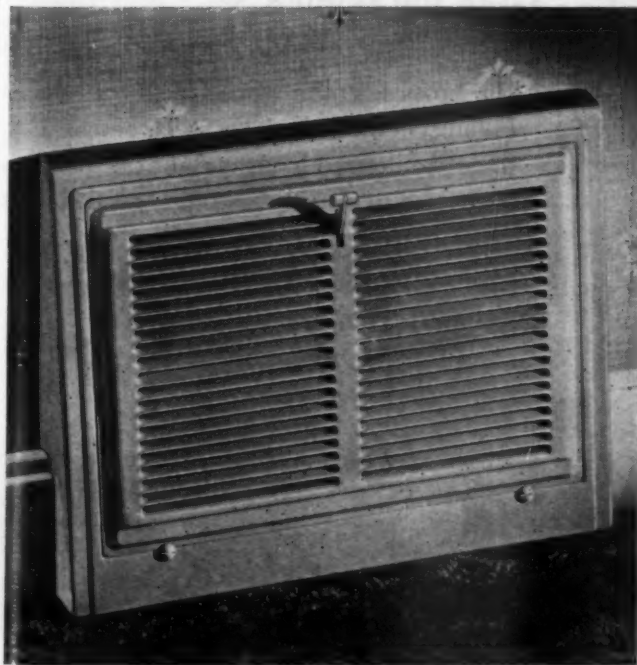
A well made, substantial register, Heat-Rite is a credit to any job—yet is priced no higher than the average warm air register.

Ask for Auer Register Book showing all models for air conditioning and warm air. Special Grille Catalog "G" also sent on request.

## THE AUER REGISTER CO.

3608 Payne Ave.

CLEVELAND 14, OHIO



## ELATERITE RIGHT for ROOFS

### 6 IMPORTANT FACTS

- Elaterite is Adhesive
- Elaterite is Elastic
- Elaterite is Not Affected by Acids or Alkalis, Water or Gases
- Elaterite is Non-Inflammable
- Elaterite is Inexpensive
- Elaterite is Easily Applied

### ELATERITE ROOFING IS IDEALLY ADAPTED FOR—

New concrete slab roofs. New roof construction on wooden decks with roofing felt. (It is applied cold.) Paving or Renewing Old Roofs, whether tar or gravel; corrugated; roll roofing of all sorts; corrugated iron roofs; modern metal deck construction; in fact, anything that gives it a firm foundation to rest upon.



SEND TODAY FOR  
Complete Data on this  
AGE-OLD PLASTIC SECRET

#### ELATERITE PLASTIC PRODUCTS

622 CHAPMAN BLDG.  
LOS ANGELES 14, CALIF.

NAME .....

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ADDRESS .....

CITY..... STATE.....

## With the Manufacturers

A. G. Kirchhoff has joined the Duro Supply Company, 919 N. Water Street, Bay City, Michigan, in the capacity of president and supervisor in the operations and policies.

For the past four years, Mr. Kirchhoff has been the manager and half-owner of the K-R Heating & Metal Engineers, one of the prominent sheet metal dealers in the area.—E. Bertossa, Gen. Mgr.

Earl L. Wiseman, manager of the Ventilator Division of The Swarthwout Company, Cleveland, has been named vice president. Mr. Wiseman was made manager of the division in 1943 and has been sales manager for eight years, having become associated with Swarthwout more than nine years ago as advertising and sales promotion manager. His previous experience included 14 years with G. P. Blackiston & Staff, advertising agency of New York and Canton, Ohio. The Swarthwout Company manufactures industrial and commercial roof ventilators.

The Lennox Furnace Company announces the appointment of Ramsey J. Petersen as Lennox Sales Engineer for the State of Michigan.

Mr. Petersen has a background of sixteen years selling experience with the same furnace manufacturer covering the States of Iowa, Minnesota, Illinois and Wisconsin. Ramsey specialized in selling large furnaces to theaters, churches and schools and is considered an authority in this field.

The Petersens will soon be located at 917 Braman Street, Lansing.

The Stoker Division of the Link-Belt Company, Chicago, announces the appointment of Clarence H. Schuettenberg as Sales Manager of the Stoker Division to succeed K. C.

Ellsworth, who severed his relations with the company on March 5th. Mr. Schuettenberg has been associated directly or indirectly with the Link-Belt Stoker Division since January, 1933. He originally was the company's distributor in the St. Louis area; later becoming sales manager of one of the company's largest distributors, and of late was district sales manager in the St. Louis area. Mr. Schuettenberg will headquarter in Chicago.

## Obituary

American Radiator & Standard Sanitary Corporation, Pittsburgh 22, announces with profound sorrow the death of Charles B. Nash, Director of Publicity, on April 17 at Pittsburgh.

James Lincoln Ashley, a director of The International Nickel Company of Canada, Limited, died suddenly March 6 in New York.

Mr. Ashley was formerly secretary and treasurer of The International Nickel Company of Canada, Limited, and vice president and treasurer of The International Nickel Company, Inc., the United States subsidiary, and was at the time of his retirement in December, 1939, the one person in the organization who had attended in one official capacity or another every annual meeting of the present and predecessor companies since the original International Nickel Company was formed in 1902.

Born in New York on October 14, 1869, he spent his youth in that city. After preparing for Yale, he joined the staff of Joseph Wild & Company, of New York, where he remained until 1902.

In 1909 Mr. Ashley married Mrs. George Finch Van Slyck, who formerly was Miss Edith Glenney of New York. Besides his widow, he is survived by a step-son, Colonel De Forest Van Slyck, member of the New York Stock Exchange firm of Fahnstock & Co., and currently stationed in Washington, D. C.



*speed up the job—with*  
**Follansbee**  
 seamless terne roll roofing

No cross-seaming with 50 foot rolls of Follansbee Seamless Terne Roofing! Easy to cut to desired lengths right on the job—edges are uniformly straight, requiring no trimming.

**FOR ESSENTIAL MAINTENANCE**—Follansbee Seamless Terne Roll Roofing is now available in 8 pound coating. Ask your jobber for prices and details.

## FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES • PITTSBURGH 30, PA.

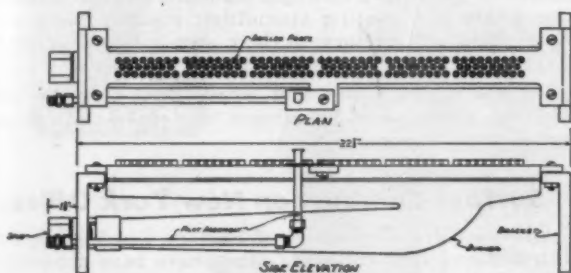


Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee, Sales Agents—Chicago, Indianapolis, St. Louis, Nashville, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada.

Plants—Follansbee, W. Va. and Toronto, Ohio.

ALLOY BLOOMS & BILLETS, SHEETS & STRIP • COLD ROLLED CARBON SHEETS & STRIP • POLISHED BLUE SHEETS • ELECTRICAL SHEETS & STRIP • SEAMLESS TERNE ROLL ROOFING

## John Zink



## UTILITY GAS BURNER

Truly a useful and handy burner. Readily portable, easily connected to a gas supply in units of one or more, it is designed to give a maximum of efficient service. There are few low heat requirement services to which it may not be applied with complete satisfaction.

Gas pressure regulators are usually not necessary unless the amount of heat produced by the burner must be held within very close limits hour after hour.

**No. 50 Size**  
**\$7.00**

Add \$1.00 if pilot is desired

### Recommended Installations of the UTILITY GAS BURNER

Aluminum Heat Treating Vats . . . Heating Soldering "Irons"  
. . . Shop and Warehouse Heating Systems . . . Textile Process Heating . . . Foundry Core Drying Ovens . . . Process Heating of Metals . . . Small Heating Units in Cold Shop Corners . . . General Laboratory Service . . . Pre-Heating Metals for Welding or Brazing.

The JOHN ZINK UTILITY GAS BURNER really provides "Packaged Heat".

## John Zink Company

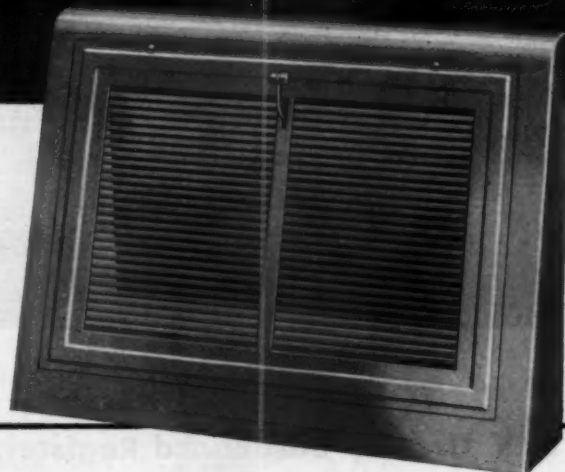
4401 South Peoria

**TULSA, OKLAHOMA**

New York - Los Angeles - Detroit - San Francisco - St. Louis

## INDEPENDENT Baseboard Registers

*with  
Bendable Fins*



**No. 92 Two-piece, with removable grille**

★ The simple artistic lines of this register express streamline design at its best and harmonize with the furnishings of the modern home. Fins are regularly set to deflect air flow slightly upward; but being easily bendable, they can be adjusted to direct air flow straight outward or downward, as required. Scientific design affords large open area with minimum air resistance.



Send for Catalog 41-G

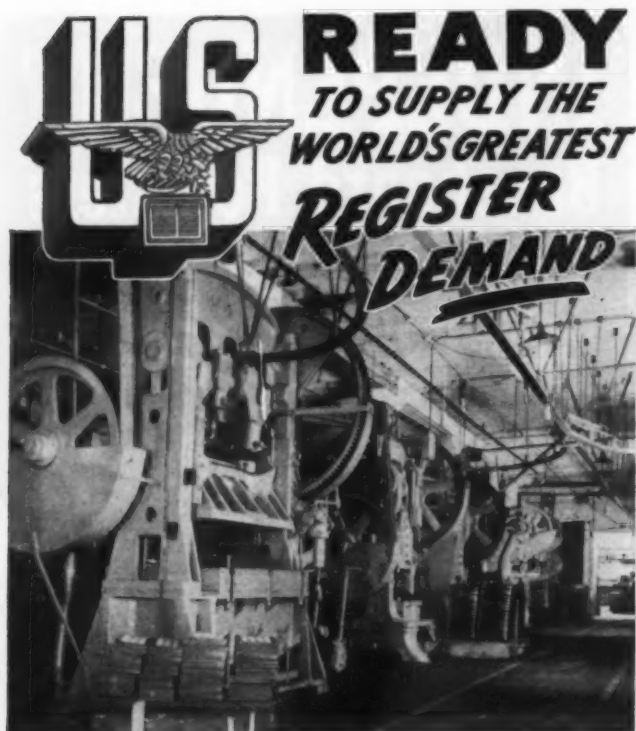
*Always Leading—Always Progressing*

## THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

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May, 1945

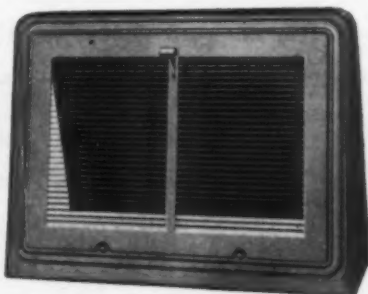




## No. 40 SERIES

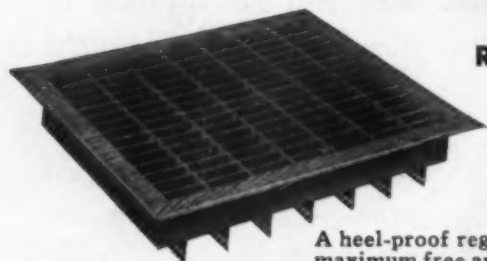
### U. S. Gravity Baseboard Registers

are the Current and will be the Post-War LEADERS. Two-Piece Construction—Removable Center with Permanent Engaging Turn-Buttons. No loose Screws. Non Vision Horizontal-Bar Style. Featured in the New Pleasing Neutral Tone METALAC FINISH.



## No. 400 TRUSSTEEL

### FLOOR REGISTERS



A heel-proof register with maximum free area. Sturdily constructed with new multiple valves running short way for easier operation and cleaner walls.

Send for latest catalogs.

Catalog 41G Gravity Lines  
Catalog 41AC Air Conditioning Lines  
Catalog 41F Pipe and Fitting Lines

**UNITED STATES REGISTER CO.**

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

## With the Manufacturers

### Maid-O'-Mist in New Home

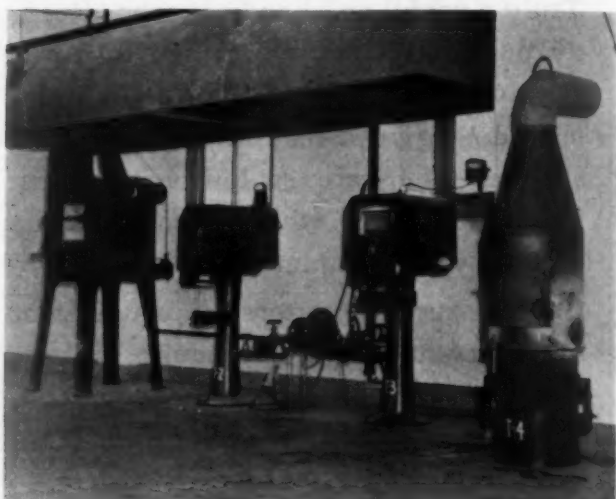
Maid-O'-Mist, Inc., Chicago, manufacturers of automatic humidifiers and heating specialties, recently have moved their offices and factory to their own building at 3217-19 N. Pulaski Road, Chicago 41, Illinois.

The move to the new and larger three-story structure has been necessitated by current war contracts and plans for postwar expansion.

### Surface Combustion New York Offices

All New York City offices of Surface Combustion Corp., with headquarters at Toledo, Ohio, have been consolidated at 315 Transportation Building, 225 Broadway, New York 7.

The move, effective May 1, makes possible one centralized location for all divisions including the Janitrol gas-fired space heating division, Janitrol aircraft and portable heater divisions, industrial heating division and the Kathabar humidity control division.



The heat-treating installations of a manufacturer of bomb tail fuses. The equipment, from left to right, consists of one Johnson No. 820 Drawing Furnace, a Johnson No. 130-LT for Manganese Moly Steel (1475 deg. F.), a Johnson No. 130 Hi-Speed Steel Heat-Treating Furnace equipped with Automatic Air-Gas Proportioner, and one Johnson No. 550 Liquid Hardening Furnace. This equipment is part of the complete heat-treating line manufactured by the Johnson Gas Appliance Co., Cedar Rapids, Iowa. All furnaces shown are equipped with Wheelco pyrometers.

### G-E Air Conditioning Department

Establishment of the air conditioning department as one of the six major operating departments of the General Electric Company has been announced by C. E. Wilson, president of the company. Operations pertaining to heating, air conditioning, and commercial refrigeration have previously been the responsibility of the company's appliance and merchandise department. The new department will have its headquarters at Bloomfield, N. J., and George R. Prout has been designated as general manager.

Mr. Prout is a graduate of Massachusetts Institute of Technology, and has been connected with General Electric since 1920, when he enrolled in the various student engineering courses while an undergraduate. Subsequently he represented the company in New England and in the southwest, and in 1939 was appointed manager of the industrial department for the entire southwest district. In 1941 he became manager of the industrial control division, with headquarters in Schenectady, and in 1944 was assigned to manage the air conditioning and commercial refrigeration activities in Bloomfield.

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May, 1945



Niagara 18 Gage Foot Operated Shears with 96 inch and 120 inch cutting lengths are ideal for sheet metal shops and maintenance departments requiring long sheets. Easy foot operation is the result of the design of every working part. Treadle extends the full length of the shear and is accessible at any location when cutting large sheets. Holddown is operated by self-locking eccentrics, thus enabling operator to let go of holddown handles while pressing the treadle. Ball-bearing, self-measuring, parallel back gage is standard equipment. Write for Bulletin 80-D. Niagara Machine & Tool Works, 637-697 Northland Ave., Buffalo, N. Y. District offices: Cleveland, Detroit, New York.

## IT'S HOME SWEET HOME IN THE BASEMENT WITH THE J&C FURNACE

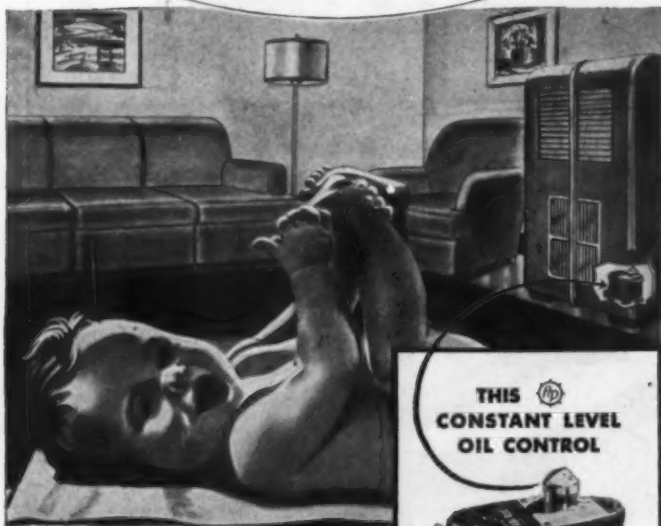


Home Sweet Home originates in the basement of the house healthfully and economically heated by a streamlined J & C Furnace. Styled to harmonize with finished surroundings, a J & C furnace has these outstanding heating advantages: self-contained blower system that floods the house with warm filtered air and changes it as often as every ten minutes; 90% direct radiation surface for producing more heat on less fuel; easy adaptability to burn either coal, gas, or oil; and sound construction of heavy gauge steel for long, dependable service. Dealers and owners alike profit from a J & C installation. Write for complete particulars.

JACKSON & CHURCH COMPANY • SAGINAW, MICHIGAN



## Safely Uniform Warmth and Comfort



● For Homes where the Space Heater is Equipped with **AP** Thermostatic Temperature Control...

WIN the gratitude of your oil-burning Space Heater customers by helping them to stretch their fuel allotment—prevent fuel waste—and still enjoy uniformly warm homes in early spring. The A-P Thermostatic Temperature Control for Oil-Burning Space Heaters using A-P Model 240 DR or UR Manual Controls is the equipment that will insure this comfort and fuel-saving economy.

**TEMPERATURE CONTROL** like this soon returns much more than its original cost—in fuel savings and uniform heating comfort. Feature it NOW for sales and profit!

**AUTOMATIC PRODUCTS COMPANY**

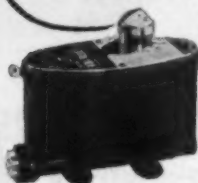
2452 North 32nd Street

Milwaukee 10, Wisconsin



**DEPENDABLE**  
*Oil Controls*

THIS **AP**  
**CONSTANT LEVEL  
OIL CONTROL**



is standard equipment  
on most good oil-burn-  
ing heaters now...



Just add the A-P ELECTRIC AUTO  
HEAT CONVERSION TOP to the  
A-P Control now on your heater.



Then install this A-P Thermostat  
on the wall, and you will have  
**COMPLETELY AUTOMATIC HEAT  
CONTROL**—always uniform and  
dependable.

## With the Manufacturers

### Mueller Holds Sales Conference

During the week of April 16-21, the Mueller Furnace Company held its first Sales and Postwar Planning Conference since Pearl Harbor day.

The Conference was attended by management and key



men of the Milwaukee plant and office staff, and by the Company field engineers.

Company plans for future operations were presented and discussed and several new items for the Mueller postwar line of heating and air conditioning equipment were presented in a preview.

Utility Appliance Corporation, Los Angeles, manufacturer of heating, cooling and air-moving equipment and household appliances, announces the appointment of Higgins Industries, Inc., New Orleans builder of invasion landing craft, as distributors of the complete Utility line for Louisiana, south central Mississippi and southern Alabama.

F. C. Stearns Company, Hot Springs National Park, Arkansas, one of the country's pioneer hardware wholesalers, will handle distribution of Utility products in the state of Arkansas.

All the established products as well as several new ones will be marketed intensively throughout the United States and abroad. The expansion of the line and of the sales organization mark the firm's 20th year of continued growth.

In addition to aligning an aggressive group of distributors, Utility Appliance Corporation is expanding its national sales representation. Seven new representatives in various parts of the country have been added within the last several weeks.—M. Breslow, vice-president.



James Matthew

Harvey-Whipple, Inc., manufacturer of Master Kraft oil heating equipment, announces the appointment of James Matthew to the company's advertising staff.

Mr. Matthew has been active in the display and advertising fields for over twenty years. He will aid in carrying out the extensive advertising and sales promotional campaign now being launched by Harvey-Whipple, Inc., to embrace numerous publications both in trade and national consumer fields. Prior to joining Harvey-Whipple, Inc., he was engaged in Government work in the aviation field.

Wm. D. Graham is the new manager of the Greensboro, North Carolina, branch office of The Trane Company, La Crosse, Wisconsin, manufacturers of heating, cooling, air conditioning and air handling equipment. This office, located at 504 Jefferson Standard Building in Greensboro, will serve the greater part of the North Carolina territory.

Mr. Graham has specialized for 20 years in various applications of heating and air conditioning equipment.



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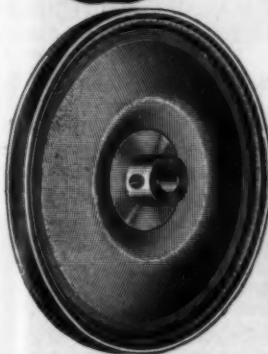
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## MAUREY V-PULLEYS

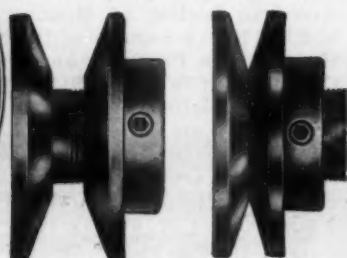
**provide a L-O-N-G step toward  
TROUBLE FREE Performance**

Our long experience in design-  
ing and manufacturing V-Pulleys,  
our complete understanding of  
their uses, and the finest ma-  
terials—all are combined in  
making Maurey V-Pulleys the  
very best Pulley installations  
for Refrigeration and Air Con-  
ditioning systems as well as for  
Fans and Blowers.

For unfailing, continuous oper-  
ation be sure to specify Maurey  
V-Pulleys.

**MAUREY  
MANUFACTURING CORP.**

2915 South Wabash Avenue  
CHICAGO 16, ILLINOIS



**These Things  
We Pledge Ourselves  
To Do — For the  
Post-War Success  
of the Independent  
Furnace Dealer**



**CAST IRON  
FURNACES**



**STEEL FURNACES**



**WINTER AIR  
CONDITIONERS**



**OIL BURNERS**



**BLOWERS**



**STOKERS**



**HUMIDIFIERS**

*Also:*

**COOLING  
EQUIPMENT  
REGISTERS  
DUCTWORK  
AUTOMATIC  
CONTROLS**

- Premier equipment is and will be sold through Independent Furnace Dealers under an attractive program that safeguards the dealer now and in the future.
- Every Premier dealer will receive exclusive territory protection.
- Every Premier dealer will receive effective selling, advertising, and engineering helps direct from the factory.
- Every Premier dealer will have the assistance of a factory trained field engineer.
- Every Premier dealer will have the advantage of a complete line of home-comfort equipment including systems for warm air heating, air conditioning, automatic fuel burning and cooling.
- Every Premier dealer will know he is fully protected against unfair competition because we will not sell to any other dealer in the territory assigned to him.

**Inquire now about the  
Premier Post-War Franchise**

**PREMIER Furnace Co.**  
Dowagiac, Michigan

**PREMIER**  
**The Year Round Line**

# The bigger the job— the more you need... **UNISHEARS**



Stanley Unishears provide a real means of speeding production and saving costs for sheet metal users. Unwieldy sheets or forms, once carted to a bench shear, are now cut to shape by a portable unishear *anywhere on the job!*

Stanley Unishears cut cleanly, without burr or distortion, along straight lines, curves and angles at a rate up to 15 feet a minute as fed. Cuts can be made entirely within the material where desired.

The portable Unishear No. 144A has a capacity of 12 gauge hot rolled steel and there are other portable types to cut 18, 16, 14 and 8 gauge. Write for full information on the complete Unishear line. Stanley Electric Tools, Division of The Stanley Works, New Britain, Connecticut.

## STANLEY

## STANLEY UNISHEARS

THE ELECTRICALLY DRIVEN METAL SHEARS

## News Items

### Elbling Honors Rathbun

Albert Rathbun, plant superintendent of A. Elbling & Sons, Pontiac, Michigan, was honored February 15 at a dinner at the Old Homestead Inn upon completion of twenty-five years as an employee of the Elbling Company. Tributes were paid to Mr. Rathbun by the executives and employees of the A. Elbling & Sons and by the repre-



sentatives of several manufacturing concerns of Detroit and Pontiac.

Mr. Rathbun, a veteran of the first World War, saw service in France and later as a member of the Army of Occupation. Shortly after receiving his Army discharge, he came to Pontiac from Radke, Indiana, and was employed by the late A. Elbling.

W. O. Hoffman, representing the J. M. & L. A. Osborn Company was chairman of the event. Also participating was F. D. Robert of Detroit Safety Furnace Pipe Company and Kenneth Lewis of the Delco Appliance Division of General Motors Corporation, Rochester, N. Y. Presentations of the company's gifts, including a \$100.00 War Bond, were made by Alex J. and Ben B. Elbling.

### Krueger Changes Name

"Since 1917, we've been in business here at 106 N. Frances Street, Madison 3, Wisconsin. You no doubt remember us as Reinick and Krueger Co. Since Mr. Reinick died in 1938 we changed the name to Krueger & Perkins Co. And now with W. K. Mansfield joining myself and C. A. (Cy) Perkins, we change our name again to Paul Krueger & Co.

"Also, in the last few months we've been fortunate to expand our facilities and coming months will see them expanded even further."—Paul Krueger.

### Obituary

John H. Kitchen of the firm of John H. Kitchen & Company died of a heart attack on April 9, 1945 at his home 5015 Westwood Terrace, Kansas City, Missouri.

Born at Easton, Pa.; Mr. Kitchen was graduated from Toledo University and came to Kansas City in January, 1895. He organized the firm of Lewis & Kitchen, Heating and Ventilating Engineers and operated it under that name until 1913, when the name was changed to John H. Kitchen & Company, with offices at 1016 Baltimore Ave. He recently celebrated his fiftieth year in business and his seventy-fifth birthday.

Mr. Kitchen organized the Kansas City Chapter of the American Society of Heating & Ventilating Engineers and had been a member of the National Society since 1906. He was Vice President and Director of the Chamber of Commerce in 1912 and 1913 and was a member of the Sons of the Revolution.

Survivors are Mrs. Mabel L. Kitchen, wife; two sons, Lewis E. Kitchen, and Francis A. Kitchen, President American Warming & Ventilating Co. of Cleveland, Ohio, and a daughter, Mrs. Edward G. O'Neill, Newburgh, New York.

The business will be continued under the title of John H. Kitchen & Co., 1016 Baltimore Ave., Kansas City 6.

## Here's the Inside Story

WHY **Wagner** REPULSION-START INDUCTION MOTORS ARE PREFERRED WHEN TROUBLEPROOF MOTORS ARE NEEDED

The inside story of the Wagner repulsion-start induction motor tells why this motor is troubleproof.



The heart of the repulsion-start induction motor is the rotor, which is so constructed that the motor starts as a repulsion motor and at a predetermined speed is automatically converted into an induction motor. This changeover is effected by a short-circuiting and brush-lifting mechanism, consisting of but a few simple parts, designed to give unfailing, trouble-free service.

Since it is the rotor that makes the repulsion-start induction type of motor, a study of the rotor, as designed and built by Wagner, the pioneers of the repulsion-start induction type motor, will prove profitable to purchasers and users of single-phase motors.

THE ROTOR illustrated embodies the latest developments in design and construction as the detailed description indicates.

GOVERNOR WEIGHTS, formed of rust-proofed steel, when thrown outward by centrifugal force move pushrods which pass through rotor and actuate brush mechanism.

BLOWER is constructed of sheet steel punchings securely riveted together.

SKewed SLOTS reduce magnetic noise, eliminate variation in starting torque at different positions of the rotor.

ROTOR WINDING is machine-wound, of heavy formvar-insulated wire and designed to fit the slots without crowding. It is effectively insulated from the rotor iron.

ROTORS are dynamically balanced by adding solder to the band and riveted weights to the blower.

LAMINATIONS are punched from nonaging, high-grade electric sheet steel selected for its magnetic properties.



**Wagner Electric Corporation**

ESTABLISHED 1891

6371 Plymouth Avenue, St. Louis 14, Mo., U. S. A.  
ELECTRICAL AND AUTOMOTIVE PRODUCTS

HERE'S A NEW FIELD for  
electrically licensed  
HEATING & VENTILATING  
CONTRACTORS



KITCHEN



BATH



GAME ROOM

"Spot  
Ventilation"  
MEANS  
Blo-Fan

New ventilation problems have been created by the advent of forced air heat and air conditioning. These lead naturally to the installation of

**Blo-Fan**  
"SPOT" VENTILATORS

Installed in the ceiling—directly over the source of unwanted air and vapors, Blo-Fans are part of the overall heating and ventilating system. Installation entails both duct work and electrical connections, and is a new No. 1 "must" in practically every postwar home.

Blo-Fans open broad avenues to additional business for the heating and ventilating trade.

Plan now to sell Blo-Fans in conjunction with your heating installations. Sizes and prices provide for all types of homes from the most modest to the most pretentious.

Write today for preliminary information on the postwar Blo-Fan line. USE COUPON BELOW

**PRYNE & CO., INC.**

1245 E. 33rd ST. • LOS ANGELES 54, CALIF.

PRYNE & CO., INC.

AA1

1245 E. 33rd St., Los Angeles 54, Calif.

Please send me information regarding Blo-Fan "Spot" Ventilators.

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



## WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE

### TOGGLE ACTION FOOT PRESSES

Made in 7", 10", 18", and 24" throat depth. A powerful linkage MULTIPLES foot pressure for fast, easy punching and forming work. No kick or violent force is required, steady pressure produces up to  $3\frac{1}{2}$  tons per square inch at point of punching. Capacity 2" hole in 16 ga. iron, 100

holes per minute or better. A light, sturdy machine for short or long-run jobs.



### POWERFUL LEVER PUNCHES

A versatile machine suitable for a wide variety of work. Made in 7", 10", 18", and 24" throat depths. All-steel-welded frame and stand. Powerful geared action. Capacity  $7\frac{1}{2}$  tons. Throat height 6", die space  $3\frac{1}{4}$ ". Standard equipment includes depth and side gauges, punch holder, die adapters, die shoe, and one punch and die.

Write for new Catalog No. 16-45.

## WHITNEY METAL TOOL COMPANY

91 FORBES ST.

ROCKFORD, ILL.

## End Breakdown Worries by Gleason-Avery "Straight-Line Control"

Because Gleason-Avery thermostats offer exclusive G-A Straight Line Control, they assure trouble-free operation . . . eliminate chain-tangling, "problem" sprockets and rotating arms.

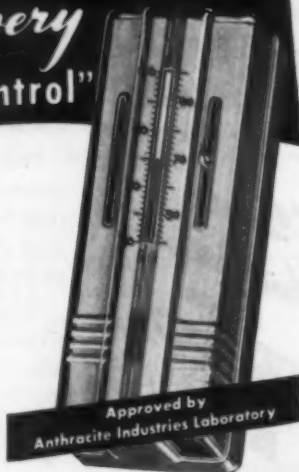
Other PLUS features of G-A thermostats:

✓ Dependable accuracy—one-degree sensitivity.

✓ Simple operation—through fingertip adjustments, synchronized settings.

✓ Easy installation—can be mounted in any position. 2-wire, low voltage.

✓ Absolute safety—if current fails, the improved G-A Spring Return closes draft, opens check.



Approved by  
Anthracite Industries Laboratory

No. 130 Furnace Sentry Unit Package for hand-fired domestic heating systems is complete with thermostat (smartly finished in Mirror-Lite), damper motor and accessories, ready to install.

LIST PRICE...\$19.50

**Gleason-Avery, INC.**  
AUBURN, N. Y.

A RELIABLE NAME IN TEMPERATURE CONTROLS

## On Our Industry's Front

(Continued from page 60)

houses or group houses with land available to each dwelling. Most publicly financed war housing consists of multi-family structures with central service facilities, and much of it probably will be sold to investors, since only large-scale operations are feasible. Mutual ownership corporations formed by consumers to acquire such projects, however, will be eligible for consumer preference, provided they can assure immediate occupancy of at least two-thirds of the projects they contemplate buying. Selling prices on dwellings are to conform so far as possible to values established by competent appraisal.

### Small Plant Protection

THE grave danger that small plants may be frozen out in a mad scramble for materials after V-E Day can be avoided, Smaller War Plant Corporation believes, by four features to be included in any reconversion plan:

(1) A preference rating for materials for small business, second only to military orders;

(2) In programming civilian items, a special reserve of materials be set aside for exclusive use of small plants;

(3) Strict inventory control to prevent hoarding;

(4) Allotment of materials to small plants through the existing Spot Authorization Plan, while the Controlled Materials Plans still is in effect.

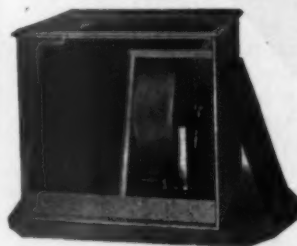
## Properaire AIR MOVING EQUIPMENT

### BLOWERS EXHAUSTERS FANS

for Homes  
Stores  
Offices  
Factories  
Institutions



"B" ASSEMBLY Belt Drive



SERIES 2000  
Insulated Package Units

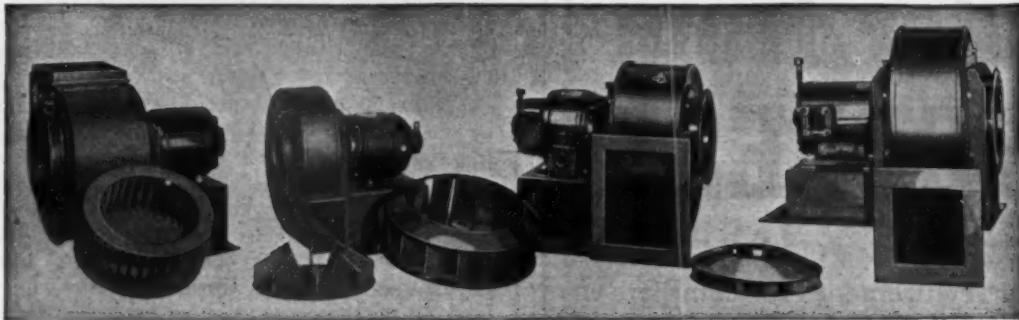


TYPE E  
Direct Drive

Ask your Jobber to write  
for "Blower File" FREE

**GRAND RAPIDS DIE & TOOL CO.**  
1202 Godfrey Ave., S. W., Grand Rapids 2, Mich.

## Johnson **FANS AND BLOWERS** *improved by continuous research*

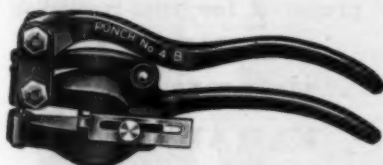


★ Johnson Health-aire Propeller Fans and Blowers of various types are now available for industrial and commercial users. And back of every one of these products is the cumulative "know-how" growing out of more than twenty-five years of constant research, experiment, improvement, perfection. New units were created and added to the expanding line to keep pace with every modern requirement. Johnson engineers have solved literally thousands of ventilating and air-handling problems—their counsel is available to you at all times to help produce "climate as you like it."

\*BLOWERS (above) available from 6" to 50".

**JOHNSON FAN & BLOWER CORP. • 1319 W. Lake Street, Chicago, 7, Illinois**

## WHITNEY LEVER PUNCHES



**NUMBER  
FOUR "B"  
PUNCH**

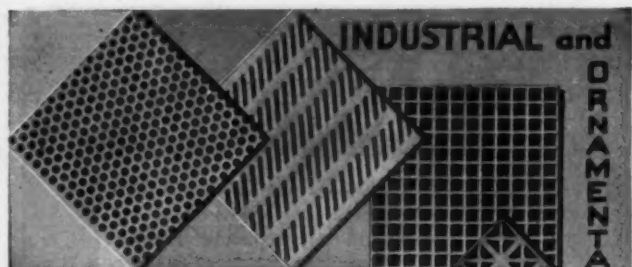
This punch for sheet metal work has a capacity of  $\frac{1}{4}$ " through 16 gauge. Weight 8 lb. Length 8 $\frac{1}{2}$ ". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.

And here's another handy tool for the modern shop—the No. 2 Punch. Length 23". Capacity  $\frac{5}{16}$ " through  $\frac{1}{4}$ " iron, weight 12 lbs., depth of throat 1-11/16". Punches and dies  $\frac{3}{32}$ " to  $\frac{1}{8}$ " by 1/64".



**NUMBER TWO  
PUNCH**

**W.A. WHITNEY MFG. CO.**  
636 RACE ST. ROCKFORD, ILL.



## Perforated METALS

### H. & K. ENLISTS

Industrial perforations include round, oblong and many shapes as used for screening, grading, draining and guard purposes.

Ornamental perforations include patterns suitable for architectural grilles, radiator enclosures, metal furniture, etc.

Write for further information.

**ANY METAL—ANY PERFORATION**

**The Harrington & King  
PERFORATING CO.**

3045 PULASKI ST., Chicago 44, ILL.

114 Liberty St., New York 6, N.Y.

# Order from PEERLESS

• Your requirements for complete warm air heating needs—including Steel furnaces—*repair parts for all makes of furnaces and boilers.* Fittings, registers, blowers, asbestos paper, electric controls, etc. Orders will be filled as rapidly as present conditions will permit.

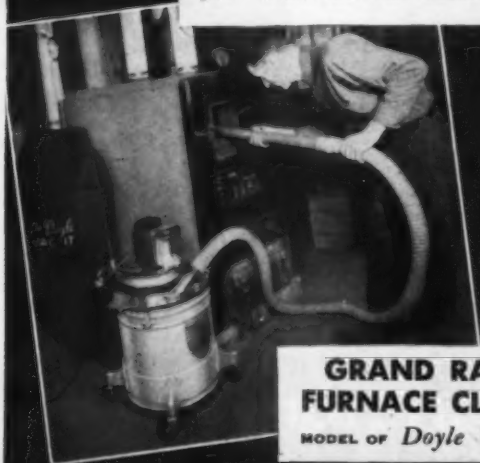
## PEERLESS FOUNDRY COMPANY

1855 Ludlow Ave.

Indianapolis 7, Ind.

## You can help CONSERVE FUEL!

You can help conserve precious fuel by giving your customers an efficient, thorough cleaning service. You assure that kind of service when you use a Doyle Vac-It. A Vac-It quickly eliminates soot and other flue travel "plug-up" conditions and does a complete cleaning job. Write for full information.



**GRAND RAPIDS  
FURNACE CLEANER**

MODEL OF Doyle VAC-IT

DOYLE VACUUM CLEANER CO., 227 Stevens St., S.W., Grand Rapids 7, Mich.

## Construction Needs

**E**FFICIENT reconversion of the construction industry has been blueprinted by the Construction Industry Advisory Group and the Construction and Civic Development Committee of the Chamber of Commerce of the United States as follows:

"A proposed construction conversion policy should be reached and working relations established for carrying it out cooperatively by and between the War Production Board, the Office of Price Administration, the Federal Reserve Board, the War Manpower Commission, the Office of War Mobilization and Reconversion, the Office of Defense Transportation, and any other government agency whose activities have a major bearing on the conversion of construction.

"Steps should be taken to encourage inventories of building materials and of mechanical equipment and machinery used in civilian construction, as follows:

(a) Rescind WPB orders which restrict manufacture and impose wartime specifications;

(b) Allocate adequate critical materials needed to manufacture or produce scarce and missing items;

(c) Permit manufacturers to utilize required materials and manpower for making of patterns, and reassembly of machinery and other production needs;

(d) Priorities assistance to building product manufacturers to do the construction required to readapt or modernize buildings or construct additions or new buildings to provide needed capacity;

(e) Priorities assistance to building product manufacturers to obtain additional machine tools or other production machinery;

(f) Relax as required the general inventory order



The General Says

## ATTENTION

Write today for the complete information which General Blower Co. has prepared for you regarding

## GENERAL MULTIBLADE EXHAUSTERS

Ask for Portfolio  
SC-101—A.A.



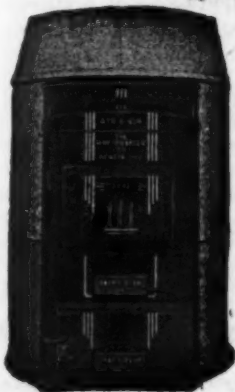
## GENERAL BLOWER COMPANY

Producers of Air Moving Equipment

401 North Peoria St. Chicago 22, Illinois



## ATH-A-NOR Furnace Repair Parts



The furnace choice of dealers who know performance and saleability has been Ath-A-Nor for more than 50 years. Quality, economy and efficiency have always distinguished the Ath-A-Nor line. Replace with Ath-A-Nor to insure maximum performance and fuel economy! And continue to pile up scrap for munitions and see that it reaches government agencies speedily!

**MAY-FIEBEGER COMPANY**  
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR  
OVER 50 YEARS  
NEWARK, OHIO

## SNO-FLUF COOLER PADS and EXCELSIOR of PRIME ASPEN

*Direct from the forest,  
to the factory, to you*

A source of constant business: your cooler customers must have their evaporative coolers repacked each year, and this is the perfect excelsior for the job! Accurately shredded and tested to 93% cooler efficiency. Sold in pads, bales or smaller handy bales. For folder and prices, write the

**Palmer**  
Manufacturing Corp.  
Phoenix, Arizona



**LOCKFORMER  
# 22**

COMPLETE  
PITTSBURGH  
LOCKS  
MADE

**IN  
26  
SECONDS**

This man, using a Lockformer 22, made the four Pittsburgh Locks required for the elbow shown in exactly 26 seconds! Acme locks, drive cleats, etc., may be mounted on auxiliary shafts, with proportionate saving in time.

WRITE FOR COMPLETE INFORMATION.

**The LOCKFORMER Co.**

4615 Arthington Street, Chicago 44, Illinois

**You can count on  
engineering assistance  
when you need it, for installations of  
Swartwout AIRMOVERS**

Our wide experience in this field and understanding of ventilation problems makes the specification of Swartwout Roof Ventilators easy. Styles and sizes to fill all needs. Write for full information.

**THE SWARTWOUT CO.**  
18511 Euclid Ave.  
Cleveland 12, O.

**Swartwout** VENTILATION  
SPECIALISTS



*protects*  
**MASONRY CHIMNEYS**

**VITROLINER**  
the Superior Vent Pipe

**REPAIR CHIMNEYS**  
for a profitable business  
and a satisfied customer

Install Vitroliner Vent Pipe in old chimneys for longer life and protection.

Vitroliner will correct: 1. DEFECTIVE LINING. 2. SMOKE BACK. 3. LEAKY JOINTS. 4. POOR DRAFT. Can be used for ALL fuels. Ideal for gas or oil fired jobs where CONDENSATION is an important problem.

**VITROLINER CHIMNEY LINER** is heavy gauge, high quality enameling stock iron and is coated inside and out with special high temperature acid resisting vitreous enamel. Bell and Spigot type joint assures a perfect and uniform fit.

Vitroliner Vent Pipe is easy to install in a few hours. Write for Catalog A-5.

**CONDENSATION ENGINEERING CORPORATION**

122 S. Michigan Ave. Chicago 3, Illinois

**1918 - 1945 . . .**

Your boy and my boy . . . it's hard to realize they're grown men . . . out there fighting — proving themselves worthy sons of the 1918 doughboys of St. Mihiel and Belleau Wood . . . the Argonne forest. Taking up where we left off—they'll finish the job this time.

The first FREDERICK stokers left our shops in that same year . . . 1918. Contributing to the comforts of the frivolous '20's, helping to save fuel in the troublous '30's . . . today the improved FREDERICK stoker aids in the conservation of precious man hours due to its

Fully active grate surface . . . Continuous speed type transmission . . . Completely enclosed windboxes and mechanism. Send for our Stoker catalog. It presents additional reasons why you should buy the sturdy FREDERICK stoker.

FREDERICK also manufactures fine Centrifugal Pumps designed and guaranteed to do the job for which they are sold. Details upon request . . . no obligation.

Hopper or Bin Feed, 200 to 850 lb. per hour. Clinker or Side Dumping Grate.

**THE Frederick IRON & STEEL CO.**  
Frederick, Maryland

**STOKER SPECIALISTS SINCE 1918**

to permit wholesalers and retailers to build up inventories to required volume.

Construction controls during the transition period until the end of the war should be confined to war needs and those essential to the civilian economy.

Price, rent and credit controls, manpower, and other wartime regulations of construction should be adjusted to facilitate this materials and equipment conversion program, and to insure prompt restoration of a free market after the war.

### Finance and Industry Division Established

There is hereby established a Finance and Industry Division, Federal Housing Administration, Washington 25, D. C., which shall be under the supervision of a Director. Hale P. Daugherty is hereby appointed Director of such Division.

It shall be the responsibility of this division to initiate, maintain and direct all marketing activities of the FHA in connection with the development of new business. The Director shall work in cooperation with any or all divisions concerned in the programs he develops.

Necessary clearance of promotional material for conformity with agency policy shall be obtained from the Director of the NHA Information Division through Robert B. Smith, Assistant to the Commissioner, who will continue to be responsible for all contacts between the FHA and the NHA Information Division.

The personnel and functions of the Industrial Service Section and the Marketing Section of the Title I and Industry Division are hereby transferred to the new Finance and Industry Division.—Abner H. Ferguson, Commissioner.

### Clayton & Lambert Buy Lamneck

Clayton & Lambert Mfg. Co., 14247 Tireman Ave., Dearborn, Michigan, has purchased Lamneck Products, Inc., 1025 Lamneck St., Middletown, Ohio.

### FOR LONG, QUIET BLOWER

SERVICE  
use

*Randall*

**PILLOW  
BLOCKS**



You can rely on Randall Pillow Blocks for long, quiet, trouble-free performance. Designed specifically for warm air furnace blower and air-handling equipment, they represent more than a third of a century of Randall experience in engineering and manufacturing dependable bearings.

Randall Pillow Blocks are self-aligning and self-lubricating. Single or double oil reservoirs assure constant graphite and oil lubrication.

The Randall Streamliner Pillow Block is illustrated above. Write for full details now. Ask for Pillow Block Catalog No. 42.

**RANDALL GRAPHITE PRODUCTS CORPORATION**

Dept. 511

609 W. Lake Street

Chicago 6, Illinois



## Heavier Heating Oil

**N**EXT winter's home-heating oil probably will be of a slightly heavier grade than was available last winter, PAW reported May 2 in an appeal to consumers to get their oil burners in peak performance condition during the next few months.

This year's oil will be a satisfactory heating fuel and will perform at a high rate of efficiency in the vast majority of burners if they are kept in good condition.

Steps advised to get the most out of the oil allotment are: (1) Consult the oil burner manufacturer's representative on adjustments that may be needed to adapt the burner to the heavier oil; (2) have necessary adjustments made by an expert oil-burner man; (3) make sure that filters or strainers are adequate for the type of fuel available; (4) keep nozzles and other parts of the combustion system clean; (5) have the cleaning and any necessary adjustments attended to now, since shortage of qualified oil-burner mechanics may make it difficult to get this work attended to as the next heating season approaches.

## Schools On New Code and Manual

(Continued from page 62)

of questions dealt with the gravity system.

"The warm air sizes for gravity were accepted without comment, but numerous questions came up with regard to the return air system. The return air system used was 'Type E' as illustrated in the 1941 Standard Code Application Manual.



**for BETTER  
PRODUCTION and  
MAINTENANCE  
at Lower Cost**

A proved time-saver in any sized shop: Libbert's flexibility gives you a wider variety of work—clean shearing of flat or formed sheet metal...straight or irregular shapes...inside or outside cuts. Libbert simplicity means that even unskilled labor soon does accurate work, lots of it and fast! Write for Bulletin.

Made in sizes up to 60 in. throat, 10 gauge capacity

**LIBERT MACHINE CO., GREEN BAY, WIS.**

**Libert Hi-Speed SHEAR**

## Premier FURNACE CLEANER

**BUILDS UP  
SERVICE VOLUME!**

The sturdy Premier Furnace and Boiler Cleaner works as your best ally in developing service business in volume—it gives you first-hand knowledge of needed repairs while it brings you profits on cleaning jobs! It's rugged and powerful, yet compact and light weight—easily carried and operated by one man. Write today for complete information.

**NEW IMPROVED MODELS  
Completely Equipped**

**3/4 H.P. . . \$74.50**

**1 H.P. . . \$89.50**

**ELECTRIC VACUUM  
CLEANER CO., INC.**

1730 Ivanhoe Rd. • Cleveland, O.

**"Use CLARAGE  
PRODUCTS and  
Repeat Business  
Comes Easy!"**

This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you KEEP desirable customers. It will pay to figure with us on any air handling or conditioning project. Write for catalog covering complete Clarage line of fans, blowers, unit heaters, coolers and conditioning units.



EXHAUST FANS



FURNACE FANS



UNIT HEATERS



COMPLETE  
AIR CONDITIONING  
• COOLING  
• VENTILATION  
• FACTORY HEATING  
• MECHANICAL DRAFT  
FANS and BLOWERS  
for INDUSTRIAL NEEDS

**Clarage Fan Company** Kalamazoo, Mich.  
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES



# IT SAWS! IT FILES!



**A PORTABLE  
POWER-SAW  
AND FILE**

*New*

## MULTI-PURPOSE TOOL

**SAVES TIME — SAVES MONEY**

★ The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Hack-saw blade in holder reciprocates rapidly with a 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable... carry it from job to job.

**LIBERALLY GUARANTEED**

SAW-CHIEFS are guaranteed to give complete satisfaction. Your money refunded if the SAW-CHIEF does not save hours of labor on countless operations.

**QUICK DELIVERIES ON A-A-S PRIORITY OR BETTER**

The Saw-Chief can be shipped quickly, ready for attaching to your drill or flexible shaft at only \$45.00. May also be obtained complete with heavy duty drill at \$90.00, or with high-powered, light-weight drill at \$83.00.

*Phone your jobber for demonstration today or write us direct!*



**ORDER *SAW CHIEF* TODAY**

**CHICAGO PRECISION EQUIPMENT CO.**  
919 N. MICHIGAN AVE., CHICAGO 11, ILL.

"The use of 'Type E' called for a 24-inch and an 18-inch return on a 20-inch furnace, and it was necessary to explain that this type of return caused an unusual amount of resistance to the air flow, thus making large returns necessary if proper flow through the furnace was to be obtained.

"The question also came up about using a large warm air pipe to a small riser in an effort to correct the poor results from an undersized run. It was explained that the use of a large pipe to an undersized run could result in reducing the amount of heat to the room by allowing the air to flow at a reduced speed in the pipe, thus allowing more time for heat loss from the pipe surface to the surrounding basement air.

"The Air Conditioning sessions were of great interest to the men and most of them were surprised at the equivalent lengths of some of the fittings."

## Overhead In 13 Easy Pictures

(Continued from page 57)

Using this method, the contractor makes sure that the margin on each estimate is equal to the margin shown by his experience figures. If he controls his overhead so that the ratio to sales does not change from that of a prior period, he will obviously earn the same net profit. This assumes, of course, that he is satisfied with the net earned in a prior period. If not, he must make the necessary adjustments by increasing his margin or effecting economies to bring the net in line with his desires.

It is also assumed that the ratio of labor hours to materials used is the same on current estimates as on

# YOUR BLOWER Requirements

AVAILABLE AT  
**Schwitzer-Cummins Company**



★ **BLOWERS**  
**FOR EVERY PURPOSE**

*Double Inlet and Single Inlet*

**HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.**



★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".

★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.



**BLOWER DIVISION  
SCHWITZER-CUMMINS COMPANY**  
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.



## 4 Little "Fitting" Guys Fighting For You!

Will cuts installation costs—Willie makes fittings fit—William keeps prices down to bed rock—and Bill sees that there is stock near you.

**FLASH NEWS!** Complete, simplified line Gravity Pipe and Fittings now available on rated orders.

**FREE:** Complete, easily understood gravity pipe and fittings catalog showing full simplified line. Write Dept. 2 for prices and catalog.

**THE WILLIAMSON HEATER COMPANY**  
CINCINNATI 2, OHIO

# WILLIAMSON

**WARM AIR FURNACES**

prior-period records. (See Exhibits J and K.)

The computation of overhead is tricky and must be watched from more angles than one to assure profit. The labor-hour method is dependable if you keep the ratio of labor to materials in the safety zone; the margin on sales method is dependable if your margin lines up with previous profitable margins and if your labor hours are not out of line with prior profitable figures.

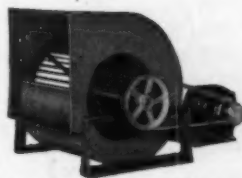
## SMCNA Meeting

(Continued from page 90)

Committee apprenticeship training program is perhaps the most publicized and is one of the best programs in existence. Another good program is in operation in New Orleans, and a third in Detroit. The Wisconsin apprenticeship training program, which formed the basis, largely, for the national association training program, is an excellent state-wide plan. If possible, the National Association should establish its national program and should then urge local associations or groups to adopt the national program with necessary revisions to comply with any specific local or area conditions.

In any given community, the procedure to be followed, according to Mr. Hanson, should probably be first, set up a joint committee; second, set up standards of training and practice; third, indenture veterans after proper selection; fourth, establish necessary schooling and classes until the permissible number of apprentices for the number of journeymen working in the area is reached. It is the opinion of

## PROPER SELECTION IS IMPORTANT!



The selection of the right blower for forced air heating is essential to the continued success of the equipment. Air-conditioning equipment cannot render fully satisfactory service unless it is correctly "blowered."

If you are one of the manufacturers who have equipped your forced air heating units with REX BLOWERS you already know of their quality and dependability. And performance is the proof of good blowers—insuring that they are well designed and sturdily made for continuous, trouble-free, top service.

Over fifteen years of experience with forced air heating equipment backed by forty years of appliance manufacturing has prepared our engineering department to improve the sales and service value of the units you make, sponsor or sell. Avail yourself of this service.

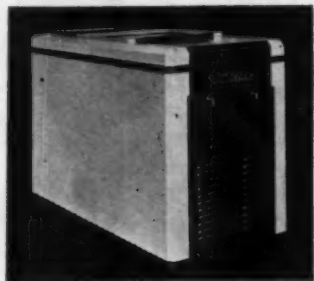
Write for catalog No. 228 on REX Air-Pak Blower Filter Units for conversion work and catalog No. 222 for REX Blowers for forced air furnaces.



2301 Superior Avenue Cleveland 14, Ohio  
Pioneer Blower Manufacturers

## WAYNE HOME EQUIPMENT DISTRIBUTOR - DEALER PARTNERSHIP PLAN

- Complete line of Home Equipment
- Broad advertising program
- Selling helps that SELL

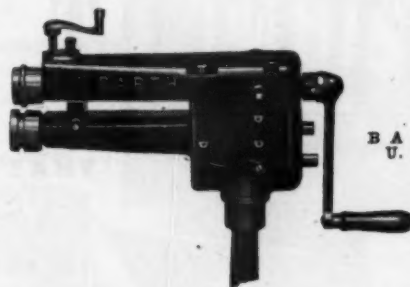


### NEW WAYNE OIL-FIRED FURNACE UNIT

for new homes and replacements. COMPLETELY AUTOMATIC. Priced for the volume market.

YOU MAKE GREATER PROFITS IN THE POPULAR PRICE RANGE

WAYNE OIL BURNER CO., FORT WAYNE 4, IND.  
Another New Unit Will Be Featured Next Month — Watch for it.



BARTH  
U. S. A.

## DEEP THROAT COMBINATION MACHINE (Patented)

A sturdily built, all-purpose machine for beading, crimping, burring, turning, wiring and flanging. 22 gauge capacity, 8½ inch throat.

Ask Your Dealer

THE BARTH MANUFACTURING MACHINE  
MILLDALE, CONN.

## FOOT POWERED SHEAR CUTS COSTS



- ✓ **SMALL INVESTMENT**  
First Cost Is Only Cost
- ✓ **NO OPERATING EXPENSE**  
Except for Labor
- ✓ **SIMPLE TO INSTALL**  
Unpack and Start Shearing
- ✓ **EASY GAUGE SETTINGS**  
Simple, Fast and Sure
- ✓ **ACCURATE SHEARING**  
Cross Head Reinforced
- ✓ **EFFORTLESS OPERATION**  
With Balanced Leverage

Famco FOOT POWERED Squaring Shears cut up to 18 gauge mild steel with ease. Made in five sizes . . . 22", 30", 36", 42" and 52" cutting widths (three largest have "hold down" attachment). The knives of all models have tool steel cutting edges. Compression springs are encased against breakage. Furnished with front, side and back gauges. Write today for full information on the Famco line of low cost Squaring Shears.



### POWERFUL PRESSES THAT NEED NO POWER

Famco Foot Presses, made in 10 models (bench and floor stand types) are widely popular for light forming and stamping operations.

Famco Arbor Presses deliver up to 15 tons pressure without power cost. Make assembly or dismantling easy. 32 models, in bench or floor types.



FAMCO MACHINE COMPANY, 1314 18th STREET, RACINE, WISCONSIN

**famco** ARBOR PRESSES  
FOOT PRESSES  
SQUARING SHEARS

## COMFORT...



**THAT'S  
EASY  
TO SELL  
and  
EASY  
TO INSTALL**

### *Brundage* BLOWER FILTER PACKAGE UNITS

Give your customers the benefit of the superior design and performance features which have placed our blowers ahead of the field for over a quarter of a century. Brundage Blowers need no re-designing to meet increased static pressure specified in the new mechanical code.

*Blower  
Specialists  
Since  
1919*



KALAMAZOO 11  
MICHIGAN

## MY INDUSTRIAL STOKER BUSINESS IS BOOMING!

I'm selling stokers to office buildings, hospitals, schools, churches, hotels and other places that use commercial or industrial sizes. At the same time, I am building up a nice prospective customer list for the smaller domestic models and delivering as fast as they are available.

Get Going now with

## GEHL STOKERS

- Engineered to do a better job for more years, by a 78-year-old company.
- Gehl reputation means customer confidence.
- All-cast chassis that resists rust and corrosion.
- Barometric, automatic control of chimney draft, and many other advantages that make selling easier.



WRITE today for literature and dealer plan. Start building your postwar stoker business NOW.

Sizes to meet various requirements

**GEHL BROS. MFG. CO.**

Established 1867

Dept. BE-800

West Bend, Wisconsin

**A GEHL WINS FRIENDS WHEREVER IT GOES**



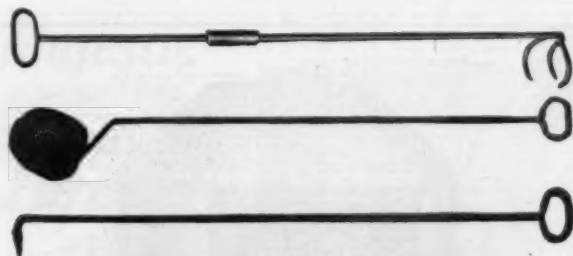
## New York War Conference

(Continued from page 91)

the association. Officers, he said, like members, have a business to carry on and local committees to work on, and the membership burden is a big job to throw on the shoulders of any man. Syracuse, he cited, is a big city and the association has not the representation there that it should have. The same is true in a number of communities. Each and every one should feel some responsibility in getting a new member to join our state association.

### Secretary Meyer Reports

Secretary Clarence J. Meyer in his report stated that this "War Conference" was held for the benefit of members to enlighten them on the activities of the association and to increase their knowledge of things useful in their line of business; also for the purpose of electing officers and directors to represent the members in managing the association and guiding its affairs during the coming year. Directors, he said, met in Syracuse on June 18, and December 2, 1944, with twelve new members admitted at the June meeting. Most of these new members came in through affiliation with the Compensation Group No. 194, through the efforts of Laverack & Haines, Inc. This Compensation Group is now built up to a membership of 76. The State association used considerable effort and money to start this group. Those of the State Association who joined the group are saving the cost



### ADAMS FIRING TOOLS

CLINKER TONGS  
ASH REMOVERS

FURNACE POKERS  
FIRE RAKES

FIRING HOES

Buy Adams Known Quality

THE ADAMS COMPANY

BRIDGE STREET

DUBUQUE, IOWA

## SPOT WELD WITH AN ACME "Hot Spot" WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.

Complete Range of Sizes  
Lifetime Guarantee!

ACME ELECTRIC WELDER CO.  
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## SHEET METAL MEN should know more about this machine



### KALAMAZOO Metal Cutting Band Saw

**SAVES  
EVERY  
DAY  
in your  
SHOP**

Why let high priced labor cut by hand—lengths of angle iron—rods—tubes—bars, etc.—when this low priced machine does these jobs with amazing Speed and Accuracy? Pays for itself in Labor Saving and Steps up Production. Scores of shops say "just what we've always wanted."

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**SAVE  
Time  
Gas  
Space**



**2300° F. IN 30 MINUTES WITH  
THIS EFFICIENT LOW-COST  
HEAT-TREATING FURNACE**

Compact, powerful and remarkably economical to operate, Johnson No. 120 is unexcelled for heat-treating high-speed steels. Equally efficient for hardening carbon steel dies, tools and small metal parts. Gets the job done quickly. Firebox 5"x7 3/4"x13 3/4" lined with high temperature insulating refractory. Temperature easily regulated. Equipped complete with Carbofrax hearth, G.E. Motor and Johnson Blower.

**\$129.50**

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Order Today!

### JOHNSON GAS APPLIANCE CO.

580 E. Ave., N.W., Cedar Rapids, Iowa

Please send me Illustrated Catalog showing all Johnson Gas Furnaces.

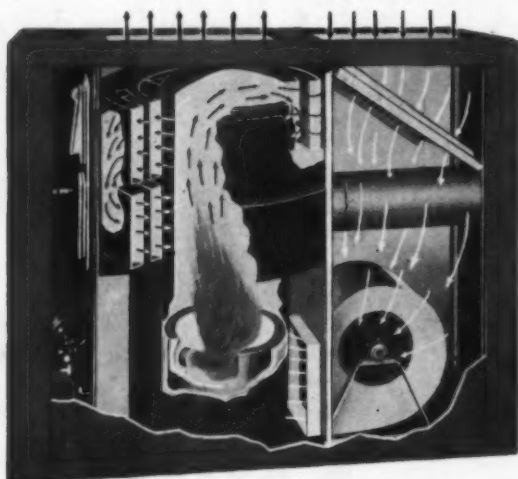
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FREE CATALOG . . .  
Describes Johnson Furnaces  
for pot-hardening, melting,  
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## THIS is a RADIATION FURNACE



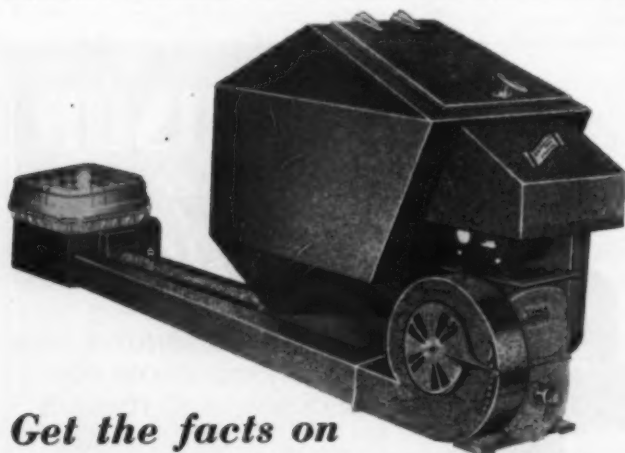
**THE** Radiation Furnace has been on the market for the last ten years, and has proved to be the most efficient unit.

In the Radiation Furnace hot gases are directed so there is a continuous flow from the upper to the lower set of steel radiator flues which absorb and transmit the heat to the

home before it escapes through the chimney. It is also provided with a safety in case any control should go wrong. It has ample cleanouts, so that every square inch of the flues can be easily cleaned. It has an observation window and a repair opening to the Combustion Chamber. Write for complete details today.

### RADIATION FURNACE CORPORATION

BENTON HARBOR, MICHIGAN



*Get the facts on*

### SCHWAB SAFE STOKERS

1. They have proven themselves over a number of years to be one of the best performing stokers ever built.
2. With a transmission that is easy to operate and one that will last indefinitely.
3. The power unit is one of the most important parts of your stoker. *The Schwab power unit is made by Schwab, for Schwab, and will never be an orphan.*
4. The quality and sturdiness of construction cannot be beat. All sizes of commercial and industrial Schwab Safe Stokers are available now! Capacities from 62 to 600 lbs. per hour. Write or wire for details.

THE SCHWAB TRANSMISSION IS A POSITIVE  
RATCHET DRIVE

81 years of continuous Manufacturing Experience

**THE Schwab Safe Company**  
LA FAYETTE, INDIANA

of their state dues over and over. As new members join, the State Association treasurer is reimbursed in a way for organization expenses, and in a few years expenses will be back in the treasury through these new memberships.

At the December directors' meeting a resolution was adopted on the method of awarding contracts to stop so-called bid-peddling. This resolution had its origin in the Sheet Metal Contractors' National Association. The resolution was presented in person by President Patrick Varden at the New York State Builders Exchange Convention in Buffalo, and they adopted it. It has also been sent to all architects and to the A. I. A. secretary and president through the National Association. The A. I. A. advises that their general meeting approved the resolution, and it was given to their committee to act upon at their April 15 meeting. If this resolution is approved by all architects and engineers, the association will have done an inestimable service to members, both State and National, which again will be worth many times the \$5.00 per year dues for membership in the State Association.

Secretary Meyer called attention to the membership campaign of the Sheet Metal Contractors' National Association. New York State has some fifty members in the National, out of a membership of 125 paid-up members for 1944; surely there cannot be anyone who cannot afford the minimum of \$10 to join the National. We are going to need this National association in the near future and especially in the post-war period to combat the growing tendency to shackle the little man in business. Taxation is a difficult problem to be solved in the post-war period. While sufficient taxes must be levied to meet the cost of



### PENN-AIRE FURNACES

GRAVITY, CAST IRON

*Popular Price  
Practical Design  
Economical Operation*

**UNION MANUFACTURING CO., INC.**  
BOYERTOWN, PA.

government, they should be distributed so that their burdens will fall fairly on all people, and it is important that they should not act as a detriment to increased business activity. Business, rather than being penalized for taking risks should be encouraged and compensated by greater rewards, instead of lesser profits on more volume. Your National association can help to work out these problems for the little man, through National strength, said Secretary Meyer.

#### Veteran Employment

The Resolution Committee—H. A. Daniel, Chairman—presented a resolution, endorsing the action of the responsible authorities of the State of New York in providing for a planning authority to study and act to meet the conditions that may arise, and to make provisions for the placement of returning boys of the armed forces into necessary and remunerative activities promptly on their return from the armed services; and recommended to the Governor and to the Legislature that they greatly extend their activities to remove industry-strangling provisions from our laws and extend encouragement to existing industries and to new ones to be established, to locate and operate in New York State. This resolution was unanimously carried.

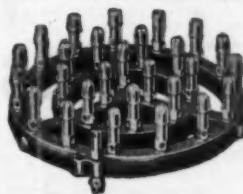
#### Materials for Essential Repairs

Another resolution unanimously carried urged the War Production Board to give more consideration to the public in the allotment of materials for essential repairs and upkeep of property to keep it in a safe condition for occupancy.

A third resolution, which was unanimously carried, urged all members as well as group managers to make every possible effort to increase the number of in-

## BARBER BURNERS

*For All Gas Appliances*

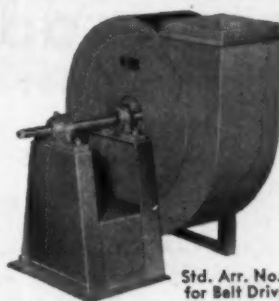


We have the facilities and experience for designing and building the exact type and size of burner unit to fit any gas appliance, using natural, manufactured, Butane or bottled gas. We cooperate with any reliable manufacturer in the necessary development and laboratory testing, and in acting as continuous source of supply for his burner units.

*Latest Catalog on request*

**THE BARBER GAS BURNER CO.**

3704 Superior Ave., Cleveland, Ohio



Std. Arr. No. 1  
for Belt Drive

New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

*Write us about your problems. Send for Bulletin No. EX-41*

**BAYLEY BLOWER COMPANY**

1817 South 66th Street

Milwaukee, Wis.

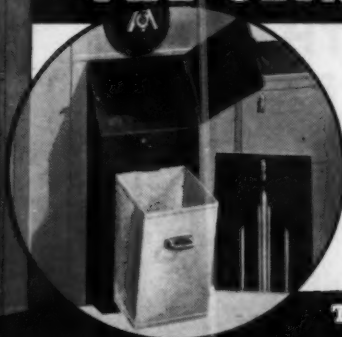
**Majestic**

HEAVY DUTY STEEL

**Stoker  
Furnace**



**THE FURNACE THAT ENDS  
THE CLINKER PROBLEM**



- Specially designed and built for stoker firing
- Suited for any make or type of domestic stoker
- Built-in compartment for convenient dust- and gas-free clinker removal
- Interchangeable panels permit placing stoker on either side
- Rugged, durable, boiler plate steel construction
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- A high quality, efficient heating plant at an attractive price.
- Backed by Majestic's 38 years of heating experience!

**The MAJESTIC COMPANY**

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**MASTER**  
TEMPERATURE CONTROLS

The "Master" mark on future temperature controls will mean  
**GREATER COMFORT  
MORE EFFICIENT SERVICE  
... LONGER LIFE.**

Yes, remember that name with assurance that, when conditions permit us to resume production for civilian needs, we shall be able to offer you Master Controls with improvements in design, workmanship and in functional accuracy. There will be some important new items in the Master line that will provide greater potential sales and profits.

Our star customer is Uncle Sam and he rates the highest priority . . . naturally has first call upon our resources. We are sorry not to be able to take better care of our old friends,—we appreciate their understanding patience,—we promise them improved products and old-time "White Service" at the earliest date possible.

**WHITE MANUFACTURING COMPANY - 2368 University Avenue — St. Paul, Minn.**



# Bremil

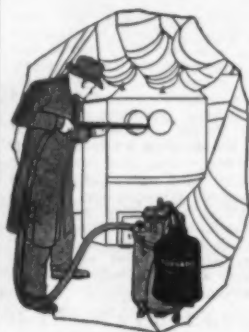


## PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to 1/4" steel plate.  
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

**BREMIL MFG. CO., ERIE, PA.**



Plan now for post-war profits. Get details!

## TORNADO Furnace Cleaners

**A PROFITABLE  
POST-WAR BUSINESS**

SET yourself up in business for post-war independence. Equip with a TORNADO Furnace Cleaner. As a leverage for selling service and supplies, it's a winner! Powerful. Portable. Easy to operate.

**BREUER ELECTRIC MFG. CO.**  
5082 Ravenswood Ave., Chicago 40

There's Good Profit for You  
in Selling

## MONMOUTH HUMIDIFIERS

- For all warm air systems.  
Descriptive Bulletins and prices on request.

Formerly made by Monmouth Products Co.  
Now produced by

**THE CLEVELAND HUMIDIFIER CO.**  
7802 Wade Park Ave., Cleveland 3, Ohio

Solve your roll forming problems with

## ★ DAHLSTROM ★ Roll Forming Machines and Roller Dies

**BUILT TO DO YOUR JOBS**

Send Sample or Rough Sketch for Quotation

**DAHLSTROM MACHINE WORKS**  
5016 N. Kedzie Ave. — Chicago 25, Ill.

surers who are desirable because of their insurance experiences and safety records.

A fourth resolution, also carried unanimously, asked members and friends to extend to the Merchandisers and to the firms and companies they represent, courtesies and assistance in making the coming years more successful and pleasant.

Similar resolutions extended thanks to the advertisers for their support in the program, to the Rochester association and its Ladies Auxiliary for their hospitality.

Director James A. Heaphy of Syracuse asked for cooperation in a drive to reorganize the weak parts of the state. In Syracuse, he cited they had had probably a 90 to 95 per cent complete turnover in contractors due to deaths and people going out of business in the past ten years. Mr. Heaphy invited the State Association's help, to send an officer to the State group to talk to Syracuse contractors, believing that an out-of-town contractor would help more than a local contractor. The convention voted to send a representative to a Syracuse gathering, expenses paid, to reorganize the local association; or to any other organization where necessary, and it was believed wise to have a meeting when the Directors' meeting is held with two or three members staying over instead of a single representative.

### Request FHA Extension

A final resolution resolved that in order to provide jobs for the men and assistance to property owners, Senators and Representatives in Congress be requested to continue FHA and to give very careful consideration to the extension of time from three years to five years for such essentials as repairs and replace-

## REPAIR PARTS

for  
STOVES—FURNACES—BOILERS

Also

**MODERNAIRE** FURNACES

Fittings, Registers, Supplies

## DES MOINES STOVE REPAIR CO.

Sam C. Green  
Fred R. Green

DES MOINES, IOWA  
Since 1869



Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

**DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.**

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ments for the protection of property; improvements such as heating plants and insulation; and that careful consideration be given to a lowering of the interest rate to 4 per cent on such repairs and improvements.

#### Entertainment

A buffet supper was given by "The Merchandisers" at Valley Echo Inn, and entertainment followed for the balance of the evening. At this party, there were approximately 200 members and their ladies.

The Conference closed with a banquet and floor show and dancing on Wednesday evening, the 21st. Harry Fitch, President of the Rochester Association, was toastmaster and all of the new officers elected at the afternoon meeting were introduced.

### Kruckman — Reconversion Just Can't Be Orderly

(Continued from page 55)

ranges between 4 and 6 months later; refrigerators, 5 to 10 months later; automobiles, between 10 and 14 months later. Obviously, the actual time depends upon intangibles no one can foresee. There is such pressing demand for these and other products that Washington is seriously concerned about the development of a tremendous bootleg market in durable goods.

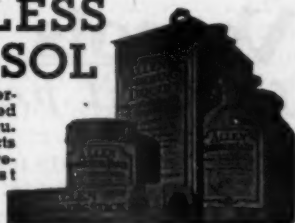
Various estimates and beliefs have been expressed about the place heating equipment may occupy in the schedule of civilian reconversion production. Un-

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Another Allen soldering product developed especially for you. Use Allen products always for best results and greatest time saving.

For stainless steel soldering Allen All-Sol is a fast flux that makes the soldering of stainless steel as easy as soldering tin plate. Also available in



a special odorless formula where less strength is required. All-Sol works with all solders but for best results use special solders.

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For Balanced  
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### GRAY'S FULL SIZE BLUE PRINT PATTERNS ARE A GREAT TIME SAVER

#### SHIP VENTILATOR PATTERNS

From 4" to 48" dia. of base, in sets and single sizes.

#### ELBOW PATTERNS IN TWO SETS

SET No. 1—1" to 20" in 2-3-4-5-6-7 piece, including T PATTERNS 2" to 20"—152 Patterns.....\$2.50

SET No. 2—20" to 40" in 5-6-7-8-9 piece, 105 Patterns, including elbow chart, showing what pattern and number of pieces for required angles, also gives the distance between seams in throat for any required radius up to 96". With the two sets is included a circumference chart showing every 1/4" up to 96" dia.

SETS No. 1 & No. 2 post-paid.....\$5.00

#### 45 Degree BRANCH PATTERNS IN TWO SETS

SET No. 3—2" to 12" on 2" to 30"—190 Patterns.....\$5.00

SET No. 4—12" to 24" on 12" to 48"—195 Patterns.....\$5.00

SETS No. 1-2-3-4 cover everything in blow-pipe work. Patterns sent by return mail post-paid upon receipt of P.O. order or check for \$15.00.

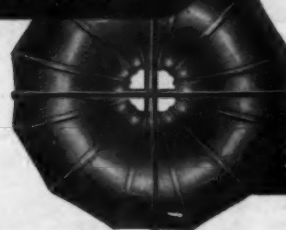
**G. L. GRAY**

Write for pattern circular giving full information.  
Mention American Artisan.

507 Grand Avenue  
NEW HAVEN 3, CONN.



IMMEDIATE DELIVERY  
FROM STOCK!



CONDUCTOR  
PIPES, TOO!

ELBOWS &  
SMOKE PIPE

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**THE MOREY FLOAT VALVE** is especially designed for evaporative coolers, small cooling towers, stock feeders, and has many other uses. Materials are corrosive resistant. Iridite plated. Non-Water Absorbing Polystyrene Float. Will flow 70 G. P. M. at 20-lb. pressure. 3/8" pipe connection.

List  
Price  
\$2.00

Usual trade discounts.  
Send for sample.



**DAN MOREY**

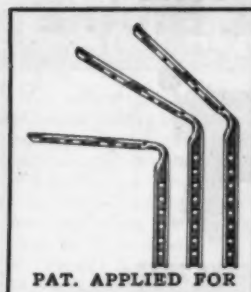
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Distributors Wanted.

**IMPROVED!**



PAT. APPLIED FOR

• **BB** •

**No. 12 SHANK**  
**33 1/3% STRONGER**

IMPROVEMENT IS APPLIED TO  
No. 15—SQUARE, No. 12—1/2  
PITCH, AND No. 25—1/4 PITCH.

SOLD THRU LEADING  
JOBBER EVERYWHERE

**BERGER BROTHERS CO.**

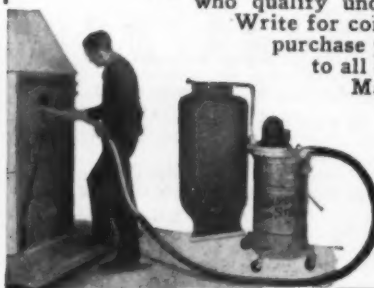
Main Office & Factory

229-237 Arch St., Philadelphia, Pa.

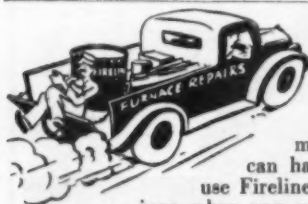


## Red Streak Cleaners . . . Pre-war Price — Pre-war Quality

• New Red Streak Furnace Cleaners are again available in limited quantity to those who qualify under Federal Controls. Write for complete information on purchase procedure. We attend to all details. All Repair and Maintenance parts and materials freely available.



**National Super Service Co., Inc.**  
1946 N. 13th St.,  
Toledo 2, Ohio



## Keep FIRELINE on the truck!

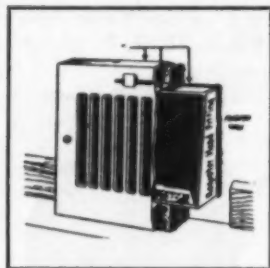
These days, when all furnace men have more work than they can handle, it's just good business to use Fireline. No long waits for firepot castings when you use Fireline. It repairs any furnace job, big or small. Seals all cracks and holes . . . Salvages burned-out firepots . . . Protects and preserves good castings with its durable, heat-saving refractory lining. Quickly installed. Job-for-job, your profit is greater with Fireline. Write for bulletins, prices, and name of nearest jobber.

Also ask about IRONSET Furnace Cement

## FIRELINE STOVE & FURNACE LINING CO.

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### Get this profitable STREEKNO business NOW!

STREEKNO eliminates dirty, streaked walls. Easy to install. HERE'S PROFIT FOR YOU—  
Cost of Material—12 Register Packings . . . \$ 4.40  
Plus 5 to 10 minutes installing time per register; your charge to Customers for 12 Registers . . . \$24.00

YOUR PROFIT . . . \$17.40

Write today for Literature and Details!

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## CHICAGO STEEL BRAKE



BEST BY FORTY-TWO YEARS TEST

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7404 LOOMIS BLVD. CHICAGO 38

happily, the estimates are so uncertain and so wide apart that it seems useless to set them down. It seems to be an indubitable fact that many of the articles which are listed as essential not only have appeared on survey lists but have been pushed into the notice of the people who make policy in WPB and elsewhere by adroit public relations missionaries. There is scarcely a week that one does not see an official release from some Government agency which obviously reveals the Government officials have been deeply impressed by the urgent public demand for radios, washing machines, refrigerators, and similar articles. There is no remote doubt the demand is urgent and vocal, but there is no remote doubt there is just as much of a demand for furnaces and other heating equipment if only these overworked people in Washington could hear it as constantly as they hear the clamor for other products. Think it over.

### Many Guesses on Cutbacks

Earlier this letter gave you one cutback estimate: 50 per cent within 4 months. Leon Henderson and his friends tell us there will be cutbacks approximating 20 per cent within 90 days and 50 per cent within 6 months. They stress that 50 per cent cutback does not mean that 50 per cent of all war output will actually be cut for the full year after V-E Day, but that more than half of the industry now in war production of one kind or another will have quit or will be ready to do something about civilian goods within 10 to 12 months after V-E Day.

There are fears in one quarter that reconversion will be a long and upsetting business and that unemployment will cause trouble. But in other quarters it is sincerely believed that actual reconversion will be

## Vernois PARTS for best performance

VERNOIS furnaces give such wonderful satisfaction because they are carefully engineered and built of the finest materials available. When a Vernois furnace needs a new part, use only genuine Vernois parts for continued fine performance. Buy them direct.

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MT. VERNON, ILLINOIS

## INDUSTRY'S VENTILATING PROBLEMS SOLVED!

No belts to slip. Direct connected. Sets up on the roof out of the way of everything. A com-



pact, self-contained unit easily and cheaply installed. Write for details now, Dept. 9.

**THE GALLAHER CO., Owatonna, Minnesota**



much less of a job than most industries have estimated. They feel that industry will be able to switch over relatively swiftly and will be able to accomplish the job without much Government help. This group also feels that controls will be mostly used to help industry rather than to hamper it.

Still another group feels very certain that the re-conversion period will create much bewilderment and confusion by reason of the change in regulation; they hold, even though the regulations are simplified, they will require new interpretation and that the explanations and applications will be beyond the uninformed capacity of the Area and Regional Government officials. For this reason it is anticipated another rush to Washington may occur.

### The Washington Exodus

Who will be here to help the business man is still a question. The President addressed a letter to Vinson asking that the business men in the war agencies stay on the job. Despite this appeal there has been almost an exodus from the Capital. Lately, Government itself has invoked some of the regulations in WMC to check the exodus. When a man leaves Government, no matter how highly placed, he must get clearance in Washington from the agency to which he is attached. In other words, he must get permission to change jobs exactly in the same manner as the janitor in his factory back home. Hitherto, he has had little difficulty in getting this clearance, but the trouble now begins when he tries to confirm his shift with the USES back home. Although the official may be a high ranking member of the firm or the corporation, he cannot legally go to work in his own plant until this process of clearance has been completed. Recently in some cities the USES, apparently nudged by Washington, has delayed the home town clearance. The result naturally is that the people from industry are a little less urgent about quitting. The result will undoubtedly be that they will leave at intervals after their substitutes have been made familiar with the job. Most of the substitutes come from the regular Government agencies and are chosen from among Government career men.

It is apparently indicated that most of the functions of an agency such as WPB may be taken over by regular Government agencies. There are signs that most of the jobs will gravitate to Department of Commerce. The signs indicate a complete reorganization. It is believed during the reconversion period Commerce will have more to do with the details of enforcing regulations than any other agency.



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FOR ANY  
FURNACE, BOILER  
OR STOVE**

*Complete Line of  
Sundries and Supplies*

**FOR QUICK SHIPMENT**

**OMAHA STOVE REPAIR WORKS**  
1206-8 DOUGLAS ST., OMAHA 2, NEB.  
SINCE 1882

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## SHEET METAL FURNACES

AIR CONDITIONING SUPPLIES

## MANUFACTURERS

**Are You Looking For An  
AGGRESSIVE DISTRIBUTOR?**

We are a well-established, financially sound firm distributing a number of nationally known lines in Northeastern Ohio. We are interested in establishing new lines...for after the war...NOW. Write for more information.

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CLEVELAND 8, OHIO



SEND FOR DETAILS  
including performance  
and dimensions  
in Catalog 410.

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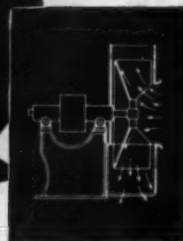


DIAGRAM shows how special streamlined inlet deflects air stream so as to reduce turbulence and back plate erosion.

**RESULT:** higher overall efficiency, lower maintenance cost, less time out for service and repairs.

**B. F. STURTEVANT COMPANY**  
HYDE PARK BOSTON 36, MASS.

## WISS "METAL MASTER"

**Compound Action  
AVIATION  
SNIPS**



Used extensively by leading aviation and metal working industries and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
  - All Parts interchangeable.
  - M1 for cutting left—M2 for cutting right.
- WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Ship-yards, on Government construction projects, and on maintenance work wherever sheet metal is required.

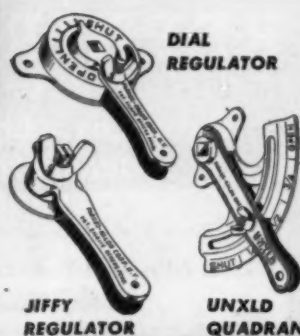
Send for literature of complete line

**J. WISS & SONS CO.**

ESTABLISHED 1848

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**A Type And Size  
For Every Need**



For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.

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QUADRANT**

**PARKER-KALON damper controls**

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DURABLE • EFFICIENT • DEPENDABLE • ATTRACTIVE

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## ECON-O-COL

the "Stronghearted"

## STOKER



ECON-O-COL STOKER DIVISION  
COTTA TRANSMISSION CORP.  
ROCKFORD ILLINOIS

THE SHIELD OF QUALITY

Write for  
Catalog and  
Prices



**SPEED UP ORDERS**  
with a  
**BEVERLY SHEAR**

Throatless shears that cut any shape . . . straight, circular or irregular. **FASTER** — Precision — accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

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For all  
Furnaces - Boilers - Stoves  
GUARANTEED TO FIT

There Will Be a Shortage of Repair Parts.  
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2100 Washington Ave. St. Louis, Mo.



# WAR TIME

The Lau Blower Company, Dayton 7, Ohio, reports its war efforts in a 4-page folder with illustrations of the products on the outside and a list of their war products on the inside.

Among the Lau products going to war are blowers for use in conjunction with the heating plants in almost every type of structure used by the Armed Services, and at outposts such as the Aleutian Islands and Russia.

For the Ordnance and Quartermaster Corps, Lau builds special blowers for the ventilation of plants and shops; for use in connection with refrigerated food storage and for use in refrigerated barges.

For the Navy, Lau builds many specially designed blowers for refrigeration, dirigibles and air conditioning; as well as special equipment for ventilation of ships and hospitals.

For the Boeing B-29 Superfortress auxiliary power unit, one type of blower requires many hours of only the most experienced workers.

Special blowers for ventilation of power and radar trailer units for the Signal Corps are being built.

In Peacetime, Lau engineers and fabricates general air handling equipment, single inlet and double inlet blowers, propeller fans and accessories.



Kimberly-Clark Corporation, Neenah, Wisconsin, reports 2,314 men and women from all divisions of the corporation in the armed forces.

The Ordnance Division has completed a very large order of Maxon Anti-Aircraft machine gun mounts, and is now at work on an order of important volume of fuses for heavy artillery shells for the Army.

Kimberly-Clark is now constructing a new mill at Kapuskasing, Ontario, Canada, for the manufacture of creped wadding products.

War Bond purchases exceed ten per cent of total corporation pay roll.

A number of Kimberly-Clark executives have served in various important capacities on the War Production Board since it was first organized.—F. A. Biederman.



Ed Stanton of the Price & Schumacher Co., Brooklyn, N. Y., a Navy man of the first World War, informs that his son in the U. S. Coast Guard has made his ninth crossing on a troop-ship, was also in South America twice and is getting "twice the Naval experience of his Old Man."—*Institute Ticker*.

## UTILITY

## Appliance Corp.

Formerly Utility Fan Corporation

Evaporative Air Coolers • Propeller Fans  
Standard and Heavy Duty Blowers  
Industrial Exhausters  
and Gas-Fired Heating Equipment

4851 S. ALAMEDA  LOS ANGELES 11



# TRADE NEWS



International Correspondence Schools, Scranton 9, Pa., has been furnishing texts for 400 technical and business courses for Armed Forces Institute. About half of their present business consists of war orders. 370 of their former employees are in the armed forces. Several are missing or killed in action.

Roy Head, former vice president Vick Chemical, became director of marketing research, February 1.  
William Stone, former district manager of Todd Protective-graph, became head of special sales training March 1.  
David Thomas Jones, became director of ICS School of Architecture May 1.

Several members of the textbook staff are on special assignment with Navy and Maritime service.—Waldo C. Wright, Asst. of Vice President.

Major David R. Webster has resumed his duties as sales manager at the Reznor Manufacturing Company, Mercer, Pa., manufacturers of gas-fired unit heaters.

Major Webster served two and one-half years in the Army. For the past two years he has been Chief of Administration, Motor Transport Service, Persian Gulf Command, returning to this country last December.

Relieved from active duty April 24, he is subject to recall until six months after cessation of hostilities.

Philco Corporation, Tioga & C Streets, Philadelphia 34, is a large producer of airborne radar equipment—an offensive and defensive weapon of the Army and Navy. Other important Philco wartime products are communications equipment, quartz crystals, armor-piercing shot, artillery fuzes, rocket projectiles, industrial storage batteries and office equipment.

## Documents on World Security

David Levov, 308 West 20th Street, New York 11, is distributing a booklet entitled "Documents on World Security" prepared by the *New York Times*, to spread a better public understanding of the facts in connection with the current San Francisco conference.

Booklets will be sent free of charge if requests are received on business stationery.

Contents cover the Dumbarton Oaks Plan, the Atlantic Charter, the Mackinac Declaration, the Moscow Declaration, text of Connally and Fulbright resolutions, the Republican and Democratic Foreign Affairs Planks, Wilson's Fourteen Points; and the Covenant of League of Nations

WATCH FOR Gilco's announcement of their new improved line of Automatic Water Heaters and Furnaces

# GILCO

Automatic

FURNACES and WATER HEATERS



J. L. GILLEN & Co.

DOWAGIAC MICHIGAN

# Leader

## KOOLSTACK FURNACES

FOR STOKERS

OIL or HANDFIRED

50,000 to 200,000 BTU's

Patented Damper  
Uses All the Heat  
in the Added Heating  
Surface

THAT  
IS SOMETHING  
TO SELL

LEADER IRON WORKS, Inc.  
Decatur Illinois



## ROCK ISLAND REGISTERS and INTAKES

Two trade marks to remember when you want the height of efficiency, beauty and low cost combined in registers and intakes.

# AIR-VANE



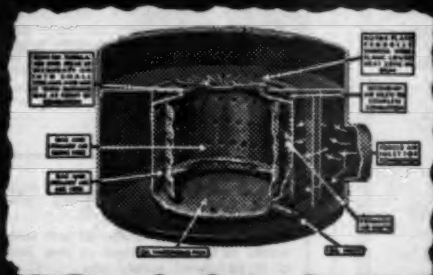
Dealers Net Estimating book, a time and money saver, sent free upon request.

★ ROCK ISLAND REGISTER CO. ★  
ROCK ISLAND ILLINOIS

famous Patented *Monogram* Vaporizing Burner  
Provides Highest Known Operating Efficiency with Oil

Full Forced  
Winter Air  
Conditioners

Booster  
Gravity  
Units



Utility  
Room  
Units

Automatic  
Water  
Heaters

The QUINCY STOVE MFG. COMPANY, Quincy, Illinois



## MERCOID

Furnace Fan Control is so easy to adjust, and at the same time the accurately calibrated dial shows exactly what you want to see in making the adjustment. The same thing is true of the M-41 Warm Air Furnace Limit Control.

The Mercoid Corporation • 4221 Belmont Ave. • Chicago, Ill.



## Drill Holes Faster, Easier with Black & Decker Electric Drills



1/4" Standard Holgun \$32.50

Models to fit any metalworking job. Capacities from 1/4" to 1 1/4" in steel—double in hardwood. Drive twist drills, wood augers, hole saws, many attachments. Powerful Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 682 Pennsylvania Avenue., Towson 4, Maryland.

### Black & Decker

Portable Electric TOOLS

DRILLS, HOLE SAWS, DRILL STANDS, PORTO-SHEARS, BENCH GRINDERS, SANDERS, PORTABLE GRINDERS.

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### Shutters Again Being Made of Aluminum!

Elgo Automatic Shutters are again being made of aluminum, just as in pre-war days. Introducing new features and advantages, the new Elgo line is all that you have been led to expect—and more!

Write for catalog and prices



"ELGO" TYPE  
AUTOMATIC SHUTTER  
Front View (Closed)

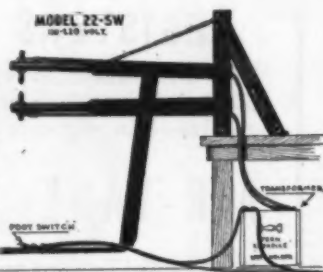
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CATALOG

ELGO SHUTTER & MANUFACTURING CO.  
6966 W. Jefferson Detroit 17, Mich.

### FERN Klondike Spot Welder

Model 22SW Bench Type

Operates on any ordinary 30 or 60 amp. electric service. Spot welds 20 gauge or lighter metal, cold-rolled steel, hot-rolled steel (Clean, Pickled), Stainless Steel, Nickel Plated Steel, Nickel Alloys, Monel Metal, Silicon Bronze Type Alloys, Pure Zinc and Nickel Silver, Unpickled Hot-Rolled Steel, Aluminum and its Alloys, Tin Plate, Terne Plate, Chrome Plate, Galvanized Iron and other coated materials. The Fern Klondike Spot Welder costs but a third of other spot welding equipment but does the work of machines which cost three times as much. This equipment can be transferred from job to job or can be used on a bench in shop. Can be purchased in an 18 or 20 inch throat, very simple to operate.



**RALPH FERN**

2517 Boulevard Ave.  
Scranton 9, Penna.

FEW AS  
GOOD

Stokers  
Handy  
Fittings  
Repairs

# GILTEDGE

FURNACES

NONE  
BETTER

Blowers  
Rock Island  
Registers  
Humidifiers

All genuine Gilt Edge repairs carry a label saying "Genuine Gilt Edge Part." We have genuine Gilt Edge repairs for Gilt Edge Hummer, Gilt Edge Crescent, Gilt Edge Radium, Gilt Edge Badger, Gilt Edge Liberty, Gilt Edge Solar, Gilt Edge Fireside, 500, 600, 700, 800 and 900 Series Furnaces and Gilt Edge Round and Square Boilers. We are successors to the Schwab & Sercomb Co., R. J. Schwab & Sons Co., and the Schwab Furnace & Mfg Co. Buy from jobbers who carry genuine Gilt Edge repairs or write us. We can furnish a Gilt Edge Furnace on the proper priority.

**SCHWAB FURNACE CO.**

193 SO. SECOND STREET  
MILWAUKEE 4, WIS.

Effective  
Roof  
Ventilation



## Airidge Ventilation

All materials and sizes. Shipped in 10-ft. lengths. Dampers optional.

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CHICAGO 8, ILLINOIS

## Complete Refractory Service to the HEATING INDUSTRY...

**PETCO**

Interlocking Combustion Chambers . . . Baffles  
Insulating Cement Steel Furnace Linings

**PECORA**

Pecora Asbestos Furnace Cement, Stove Cement,  
and Boiler Putty

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**PYRO—Ohio**

Fire brick, hearth and baffle mix, cupola block,  
plastic furnace lining

**B. A. PETERSON COMPANY**

DOWAGIAC, MICHIGAN

## CLASSIFIED ADVERTISEMENTS

### Manufacturers Agents Wanted

Long and well established manufacturer of complete line of fans, blowers, evaporative air coolers and domestic gas heating appliances desires direct factory agents selling through dealers and distributors. Straight commission. In answering state territory now being covered, lines handled and other necessary details. Address Key No. 598, American Artisan, 6 No. Michigan Ave., Chicago 2, Illinois.

### UNIVERSAL TOOLS

Immediate Shipment. Overnight  
by Air to Anywhere U.S.A.

A Dandy 10-Piece Set: Rigid Pipe-wrench, Channellock Pliers, Adjustable Wrench, CEE-TEE Pliers, Diagonal Cutters, Ballpeen Hammer, Plastic Screwdriver, Waterpump Pliers, Hack-saw & Blade, Cold Chisel—\$19.85. Remit with order TODAY.

UNIVERSAL TOOL COMPANY

1527 Grand AA Kansas City, Missouri  
Price list and Orderblank Free: REMEMBER:  
We have it—Can get it—or it isn't Made.

### IF IN DOUBT

about Reconversion and Post War Layout, including Products, Production and Cost Controls, Incentives and other modern systems of industry, consult with Ernest E. Zideck, 1405 Majestic Building, Detroit 26, Michigan.

Trademark

**YAGER'S Soldering Salts — Past Reg.**

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

1/2 lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.  
**LEX. R. BENSON CO., INC., HUDSON, N. Y.**

# AMERICAN ARTISAN Service Section

**SERVICE SECTION:** Rates for display space in the Service Section are \$5.00 per inch per insertion. One-inch minimum space accepted.

**Classified Section:** Rates for classified advertising are 5 cents for each word including heading and address. Count seven words for keyed address. Minimum \$1.00 for each insertion. Cash must accompany order.

## AVAILABLE FOR IMMEDIATE DELIVERY

BEADERS: No. 4 Nia. 24 ga. 6" Thr.  
PIPE FOLDERS: 60" Nia. Power, 30" 24 ga. 48" & 30" HAND.

CAN. MACHY.: No. 190 TORRISWOLD HORIZONTAL AUTO. BOTTOM SEAMER. No. 22 CAMERON POWER SQUEEZER & FLANGER.

DRILLS: 34" Barnes; 25" Snyder; 16" Avey; 14" H & W; No. 12 Natco Multiple; 2, 3, & 4-spindle Avey.

RADIAL: 3 Ft. AMERICAN MAXI-SPEED SENSITIVE, motor on arm; 3 Ft. FOSDICK, No. 4 M.T., P.F.

LATHES: 18"x8" AMER.; 16"x6" PRATT & WHITNEY; 14"x6" BRADFORD; 14"x6" & 14"x4" LODGE & SHIPLEY.

These are but a few of the machines available in our large and diversified stock. Let us help you with your engineering problems—We solicit your inquiries for machines to do your war and post-war work.

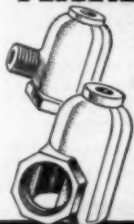
ROLLS: LEVELLER: 5' Niles, 63" rolls, 4 1/4" dia.; 48"x10' Globe Hyd. Stretcher; POWER: 18", 1/2" cap. M.D.; W & W Form; ANGLE: No. 14 Excelsior; 2"x2"x 1/4" cap.; Williams & White, D.B.G.; CORRUGATING: 32" Pexto; 30"x3"; 36"x6"; 31"x4 1/2".

SHEARS, ROTARY: No. 6 Quickwork, 1" cap., 48" thr.

SPOT WELDERS: 350 Amp. Zeus; 250 KW Federal Press Type; 25 KVA Thomson; 20 KVA Gibb Pres-Type; NEW REX WELDERS, 150, 100, 75, 50, 40, 30, 20, and 10 KVA IN STOCK.

*Large* and complete stocks!  
IMMEDIATE SHIPMENT

## MARLEY SPRAY NOZZLES

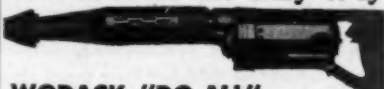


"Tops" for Air Washing, Humidifying Brine Spray Nozzles, etc. Marley nozzles lead all in sales and in profits to you.

\*Finer, more uniform spray  
\*Effective operation at low pressures  
\*No internal parts

MARLEY CO., INC. Write for Literature Now! Kansas City, Kansas

## Drill Concrete the Easy Way



### WODACK "DO-ALL" ELECTRIC HAMMER AND DRILL

Saves time and money installing expansion anchors. Drills concrete to 1 1/4" dia.; metal to 3/4". Two tools in one. Easy to maintain. Universal motor. Star drills in 17 diameters. Also chisels, bull points, etc. Write for bulletin No. 644.

Wodack Electric Tool Corporation  
4627 W. Huron St. Chicago 44, Ill.  
Telephone AUstin 9866

## GRAND RAPIDS FURNACE CLEANERS

Write for Details

DOYLE VACUUM CLEANER CO.

227 Stevens St., S.W.  
Grand Rapids 7, Mich.



## NEW PRODUCTS for Postwar

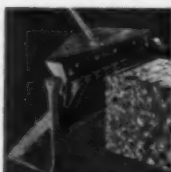
engineered at low cost by

TROUBLESHOOTERS COOPERATIVE CORP.

1405 Majestic Bldg., Detroit 26, Michigan  
Write for Prospectus.

## SMITH'S CLEAT BENDERS

THE COMPLETE DRIVE CLEATING MACHINE SAVES MORE TIME per joint of pipe, over ordinary hand methods, than any other machine used on square pipe work . . . and it is USABLE MORE OFTEN



per job, because it edges the pipe and makes drive cleats to join them together.

### NOW TWO SIZES

NO. 12  
Takes All Sizes Up to 12"

NO. 18  
Takes All Sizes Up to 18"

Write for More Information.

R. E. SMITH 1513 MONROE, WAUKEGAN, ILL.

## Pentco Improved Compound Action Aviation Snips

U. S. Government approved



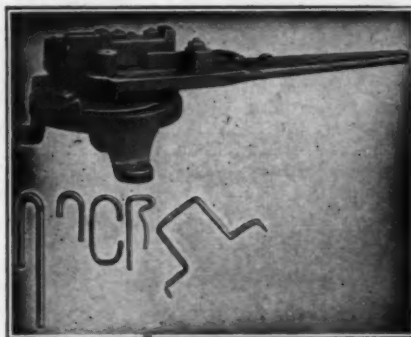
For Cutting All Kinds of Metals

A Real Precision Tool!  
Maximum Power—Minimum Effort  
Right and Left Cut

Blades made from alloy steel hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades. Case hardened bolts. Made in four different types. Write for catalog S.

PENN TOOL CO.

2415 N. HOWARD ST., PHILADELPHIA, PA.



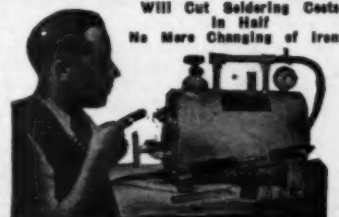
## THE HINMAN BENDERS

Angle & U, Eye and Pipe

Write for catalog.

manufactured by

L. R. EVANS MACHINE COMPANY  
SANDWICH, ILLINOIS



Will Cut Soldering Costs in Half  
No More Changing of Irons

Always the Right Amount of Heat for the lightest as well as the heaviest jobs. Especially adaptable for soldering with Victory Solder.



Quick set dividers—fastest and most accurate on the market—two sizes for circles up to 36" and 48". Guaranteed—Order now.

REINER & CAMPBELL CO., Inc.  
867 Norwood Terrace, Elizabeth, N. J.



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# Guide to GOOD SHOP PRACTICE



## USE FOR—

Use **SUPERIOR GALVANIZED** for a time-saving, work-saving sheet. It is uniformly tempered for good workability. Its zinc coating has an unusual ability to withstand forming operations without flaking or peeling. It solders well, handles well. It's a quality sheet through and through.



## USE WHERE—

Use **CHECKERCOAT** where you want smart appearance. It is a handsome sheet, galvanized in bright, checkered squares to add extra value to jobs where appearance is important. Like all Continental-Superior galvanized sheets it is made of open hearth steel and coated by the Superior Process.



## USE WHEN—

Use **COPPERIOR** when rust resistance is an important factor. It is made of copper-steel for greater resistance to rust and corrosion.

Both *The Superior Sheet Steel Company* and the *Continental Steel Corporation* produce these three well-known galvanized sheets. Ask your jobber about them today.



# THE SUPERIOR

SHEET STEEL COMPANY - CANTON, OHIO

PRODUCERS OF STEEL SHEETS, including SUPERIOR Galvanized, Tite and Extra Tite Coat Galvanized, CHECKERCOAT, LASTIKOTE, COPPERIOR (copper steel base), SUPERIOR Galvannealed,

SUPER METAL, SUPERIOR Long Terns (drawing quality), Hot Rolled Annealed, Hot Rolled Annealed Pickled, Pickled Blue, Deoxidized, and Standard Types of Galvanized Formed Roofing.

DIVISION OF CONTINENTAL STEEL CORPORATION

GENERAL OFFICES: CANTON, OHIO

**This is Air-Conditioning Time—**



June 1945					
MON	TUE	WED	THU	FRI	SAT
May 30	May 31	May 30	May 31	1	2
4	5	6	7	8	9
11	12	13	14	15	16
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# RESEARCH AIR FILTERS

*make air-conditioners  
more efficient*



**FREE  
CATALOG OF  
FILTER SIZES**

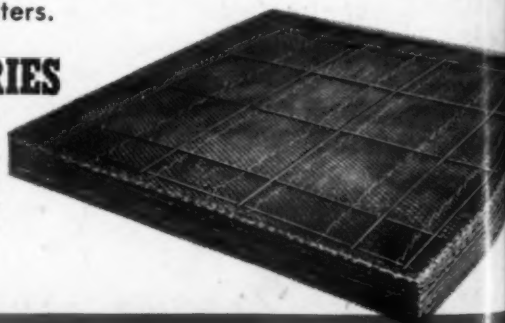
makes it simple for you to service air conditioning units. Shows at a glance the number and size of Research Air Filters required.

**PROVEN SELLING AIDS**  
include newspaper mats, direct mail material, radio spot copy, posters, envelope stuffers, equipment labels, blotters and record cards. Yours FREE upon request. Write today.

Sweltering summer days will soon be with us—dust and pollen will fill the air to irritate hay-fever victims. These are just two reasons why folks with air-conditioning systems will want to have them in condition. Reasons why they will be in the market to make their conditioners function perfectly. Reasons why you should feature Research Air Filters.

## NO. 200 SERIES

Two strong permanent wire grids with removable RIP-CLEAN filter pads between. Pads are self-sealing to guarantee top filtering efficiency.



# RESEARCH PRODUCTS CORPORATION

MADISON 3, WISCONSIN

Organ  
New  
Work